VISIT…

01

Golf Ball Cage

Puzzle Goal:

Extract, and return golf ball to inside of cube.

Materials:

Walnut, golf ball

Classification: Misc. Assembly

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01 Golf Ball Cage

Puzzle Solution:

Description

The puzzle consists of a cube enclosing a golf ball which is visible through ports on each face of the cube. The puzzle objective is to disassemble the cube to permit removal of the ball. Breakdown of the cube results in three subassemblies, each consisting of two faces, corner bonded at 90 degrees to each other. The three subassemblies are unique and non-interchangeable and are designated, for solution description purposes, as Part A, Part B and Part C as shown in the figure. Numbers are also designated for each of the faces. Attachment of the subassemblies to each other is accomplished by 45 degree splines and slots located along the perimeters of each subassembly. Corner P is selected as a reference point as an aid in describing the puzzle solution below.

Taking the Puzzle Apart

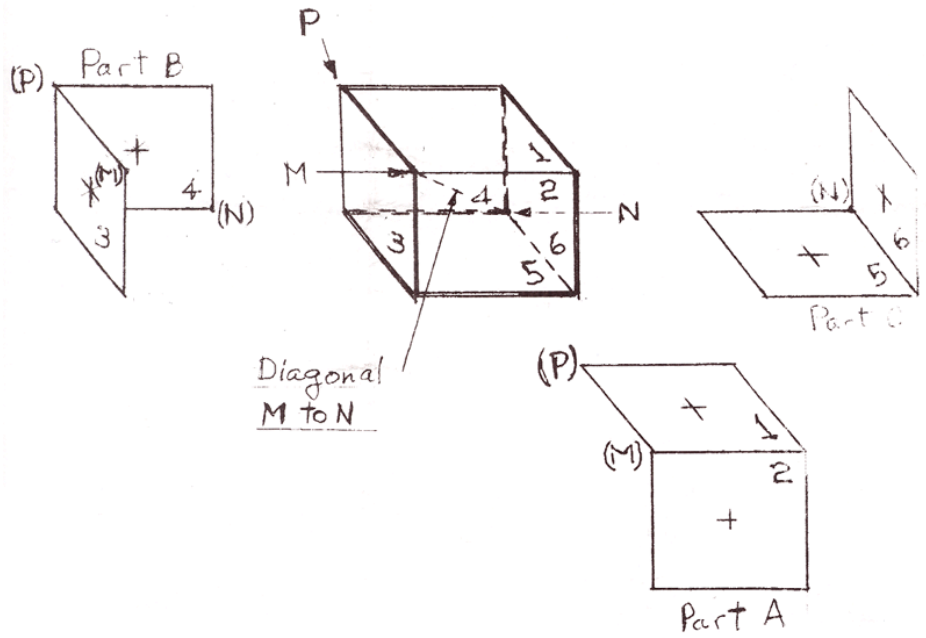
Step I- Examine the ports on the cube faces and find on the inner ring of one of them a short notch. This notch is contained on Part A and is closest to Comer P of the assembled puzzle

Step 2- Place the puzzle on a tabletop and orient the notch and designated Corner P to be to your left and farthest back from the edge of the table while the front face is parallel to the edge of the table.

Step 3- While maintaining the above orientation, place the fingers of your right hand as follows: thumb into the port of Face #2; forefinger into the port of Face #6. With your left hand, place your thumb in the port of Face #3 and your index or middle finger in the port of Face #4.

Step 4- While maintaining the finger pressures described above, pull the left side of the puzzle exerted by your left hand from the right side of the puzzle exerted by your right hand. A separation of about I /8 inch will occur around the perimeter of the subassembly designated as Part B.

Step 5- Maintaining the orientation of Step 2, lift the puzzle and grasp Part B with your left hand, thumb on the port of Face 3, middle finger on the port of Face 4, and your forefinger pressing down on Face 1. This maintains the separation achieved on Step 4. From Figure 1, establish the location of Part C whose faces should be at the bottom and to the right. With your right hand, grasp the ports of Part C with your thumb and forefinger and pull it from the puzzle. Your direction of pull must be in line with the axis from Comer M to Corner N. The rest of the puzzle falls apart and the ball is released.



Reassembling The Puzzle

Step I - Mate Part A with Part B with the golf bafl in position. In the normally closed position, Part A is locked to Part B by a very shallow spline on Part B. Unlock Part A by lifting Part A slightly to clear the spline and then slide Part A along Part B until it is stopped by a gap limit on Part B.(Note: There are four ways to mate Part A to Part B. Only two of the four ways permits the sliding action of Part A along Part B. Of these two, only one allows the assembly of Part C in the next step.)

Step 2- With your left hand, hold the position of Part A to Part B as described in Step I. Now, with your right hand, mate Part C to Parts A and B. There is only one orientation of Part C that permits assembly.

Step 3- Close the gap between PartB and the Part A/Part C assembly by pressing Part C to the other parts. You will hear a click indicating full assembly of the puzzle.

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02

Radix

Puzzle Goal:

Take the three pieces apart, and then put them back together again. No force is required.

Materials:

Cast Alloy

Classification: Take Apart

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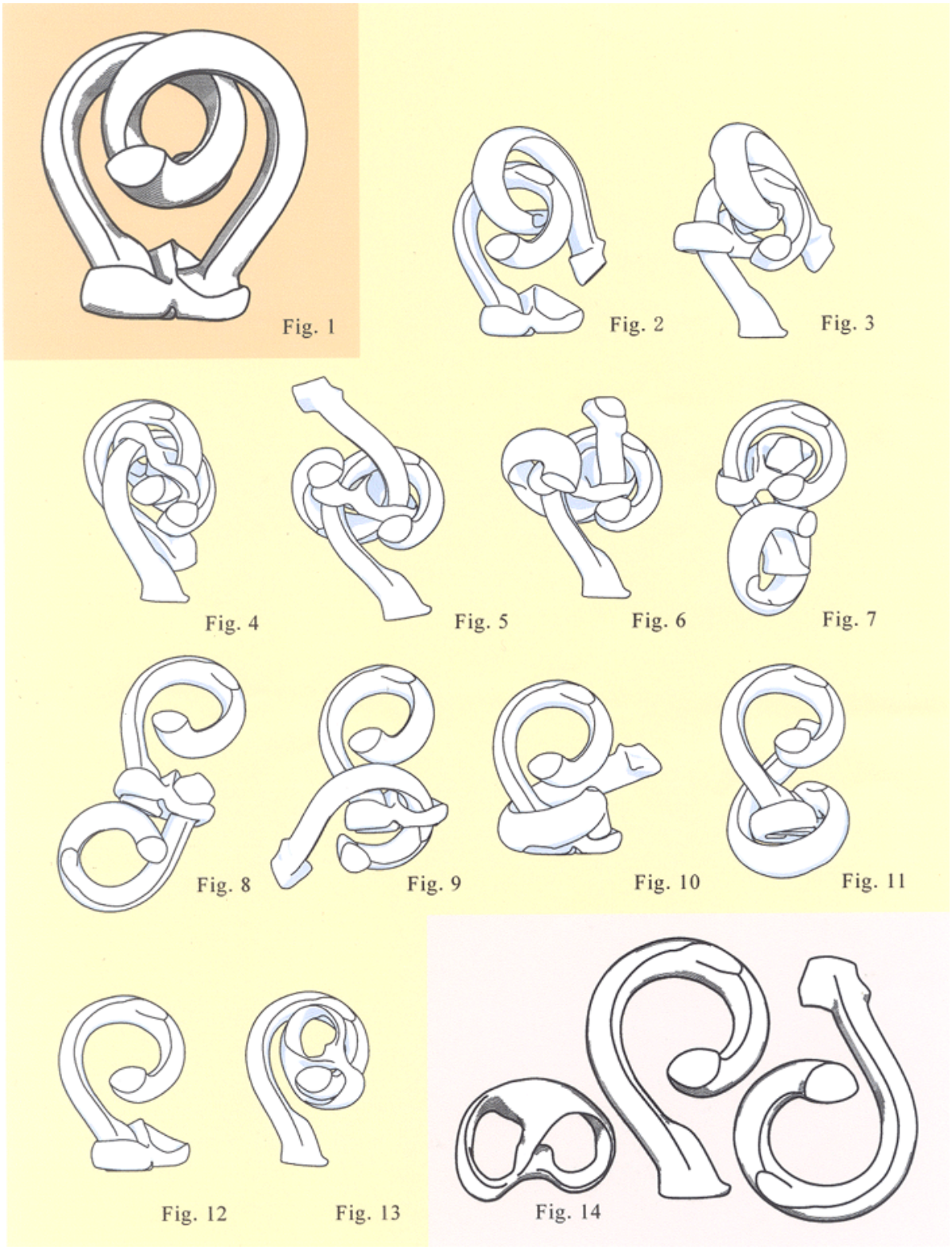
02 Radix

Puzzle Solution:



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03

F L E X A L E X

Puzzle Goal:

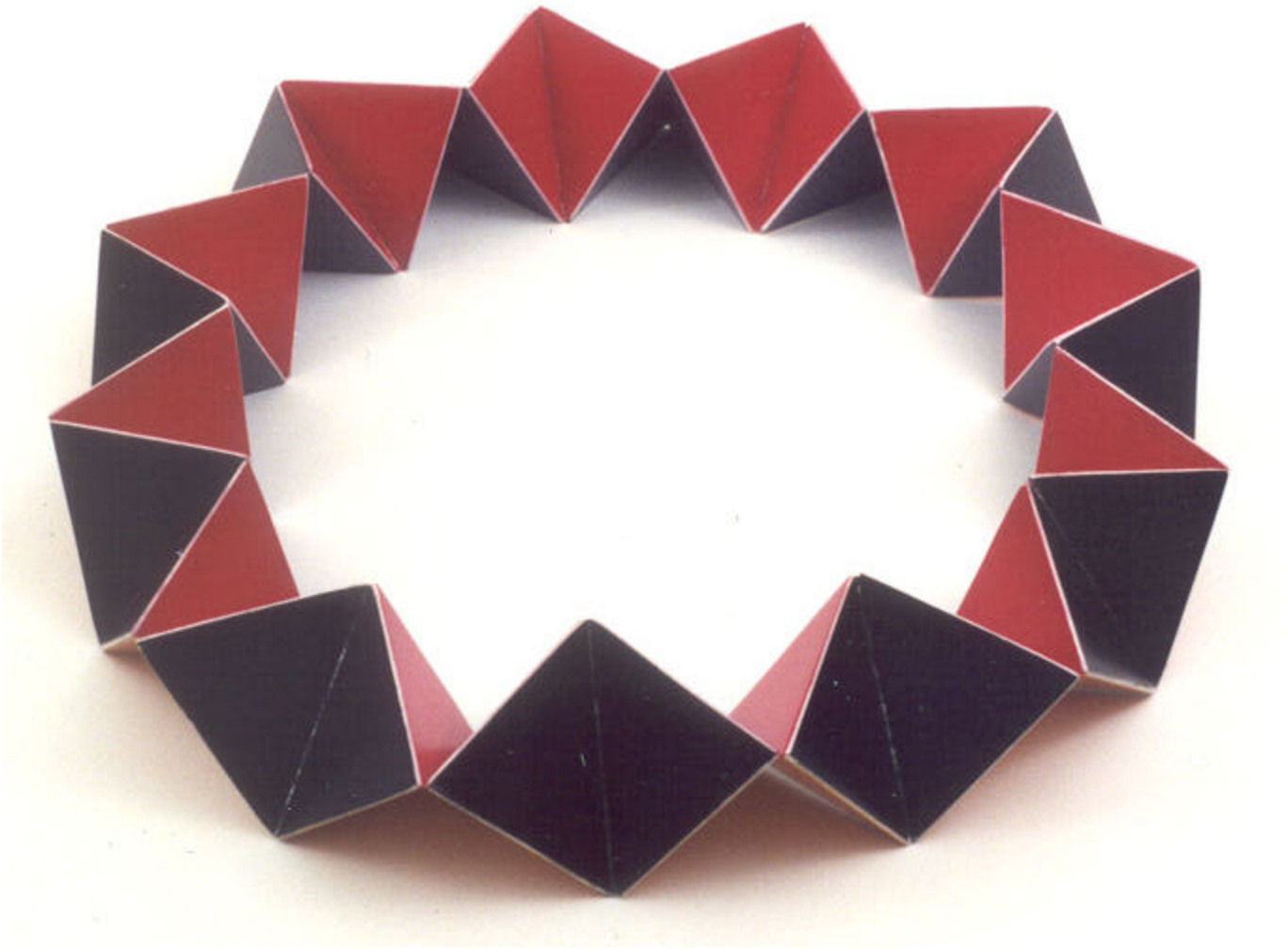
Transform the rhombic dodecahedron from red to green, blue or yellow.

Transform the rhombic dodecahedron to 4 rhombohedrons in line.

Materials:

PVC and tissue tape

Classification: FOL-HGCL



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03

F L E X A L E X

Puzzle Solution:

You have to master the following movement. It's very easy to reach the figure 1. With both hands you take three rhombohedrons in line and then open them slowly, so that the fourth rhombohedron will be building up automatically.

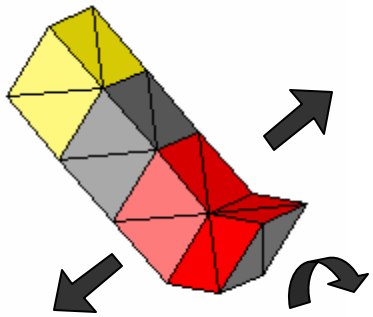
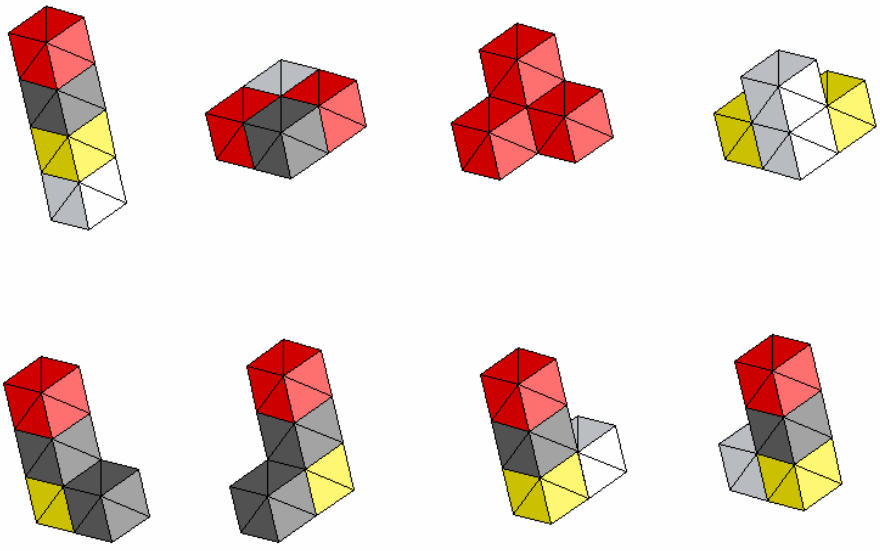


Figure 1

Some of the possible compositions in space:



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04

L U C ’S S P A C I A L

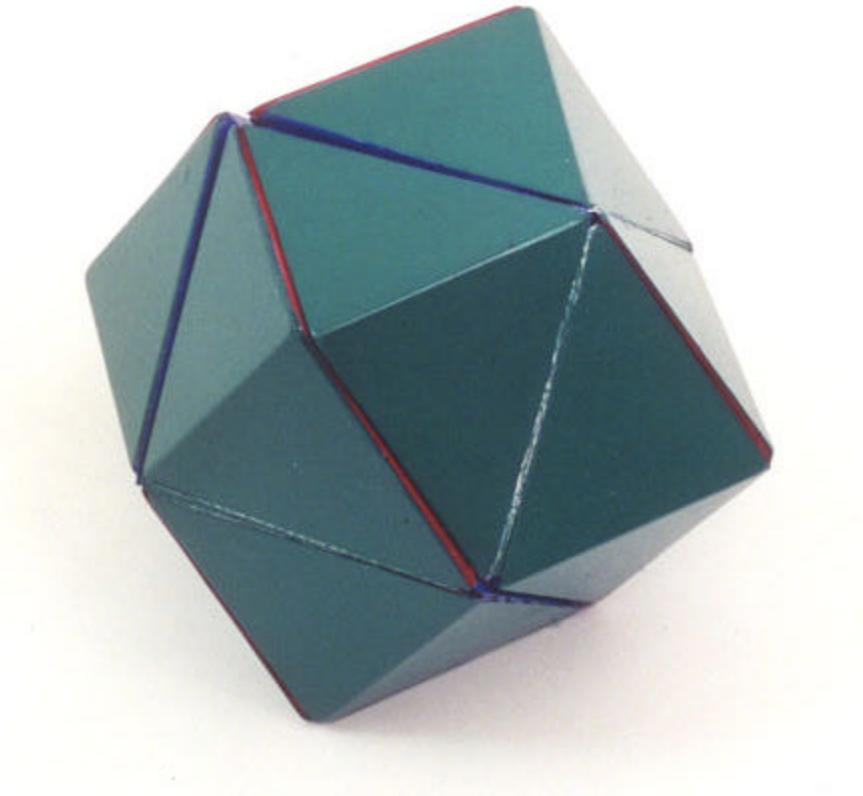
Puzzle Goal:

Transform the surface of the rhombic dodecahedron from red to green, or green to red.

Materials:

PVC and tissue tape

Classification: FOL-HGCL



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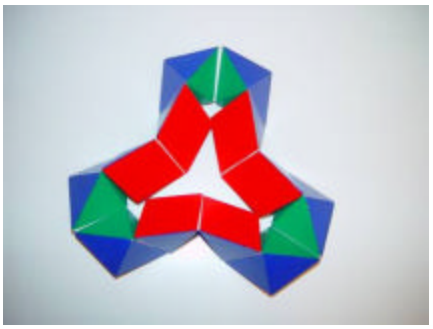
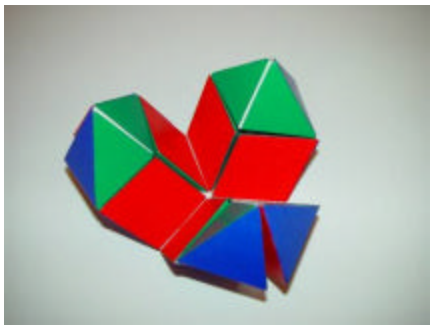
04

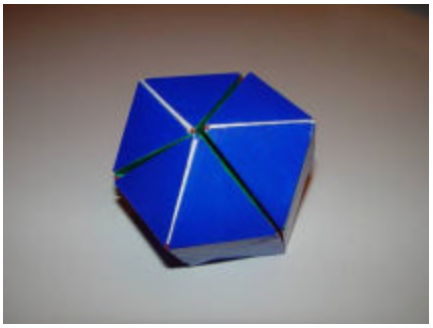
L U C ’S S P A C I A L

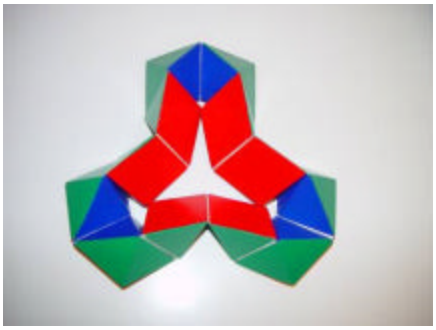
Puzzle Solution:

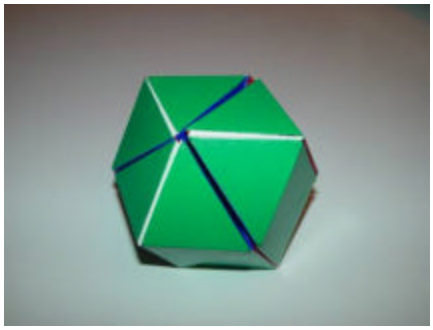
You have to transform the blue Rhombendodekaeder to the green one by a movement through space:











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05

Concrete Puzzle

Puzzle Goal:

Combine the elements to form a cube

Materials:

Casting-mortar

Classification: Put together

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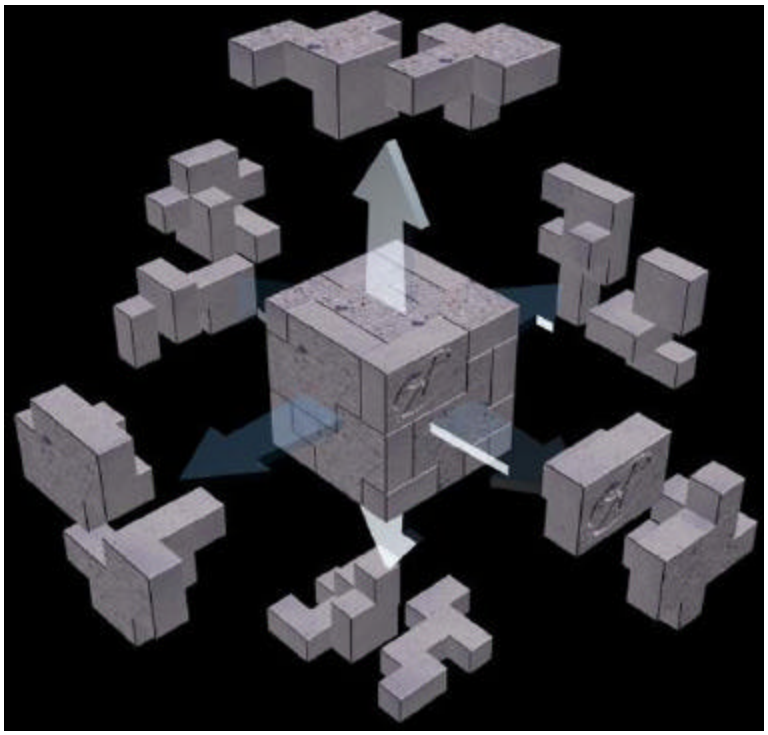
05

Concrete Puzzle

Puzzle Solution:



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06

Cross-Based Puzzle

Puzzle Goal:

Construct the prism

Materials:

Cedar wood

Classification: Interlocking assembly

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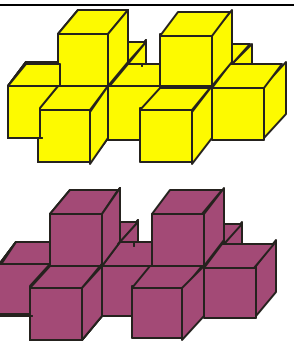
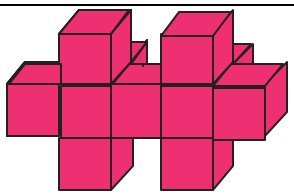
06 Cross-based Puzzle

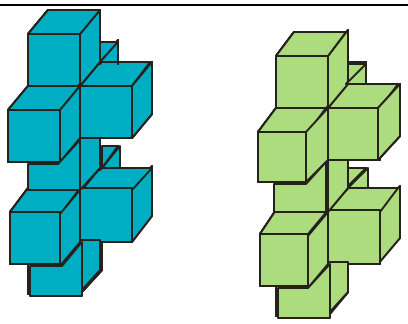
Puzzle Solution:



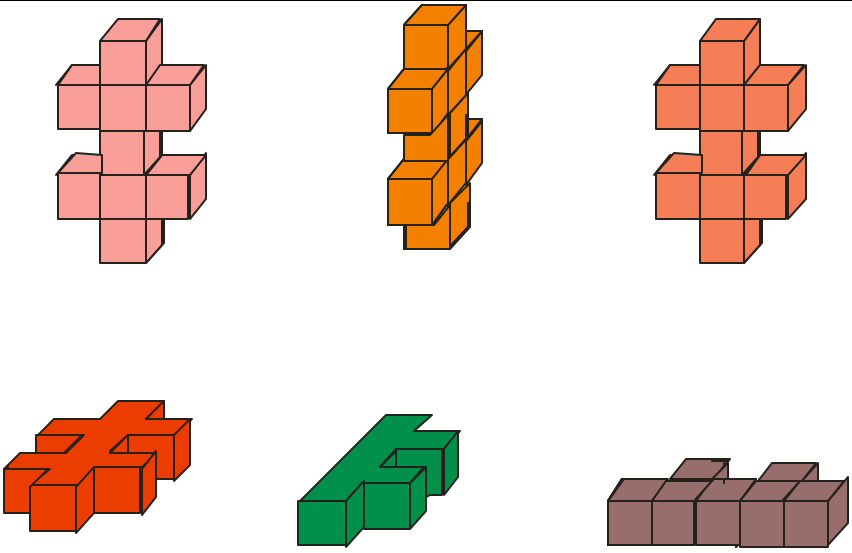
1. Put these pieces one on top of the other.



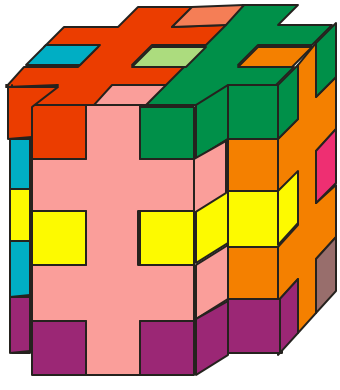
3. Assemb ling this piece in this orientation behind the preceding pieces.



2. Assembling these pieces behind the preceding pieces.



4. Finally put these pieces in position according to the drawing, and the puzzle will be finished.



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07

Double Stair

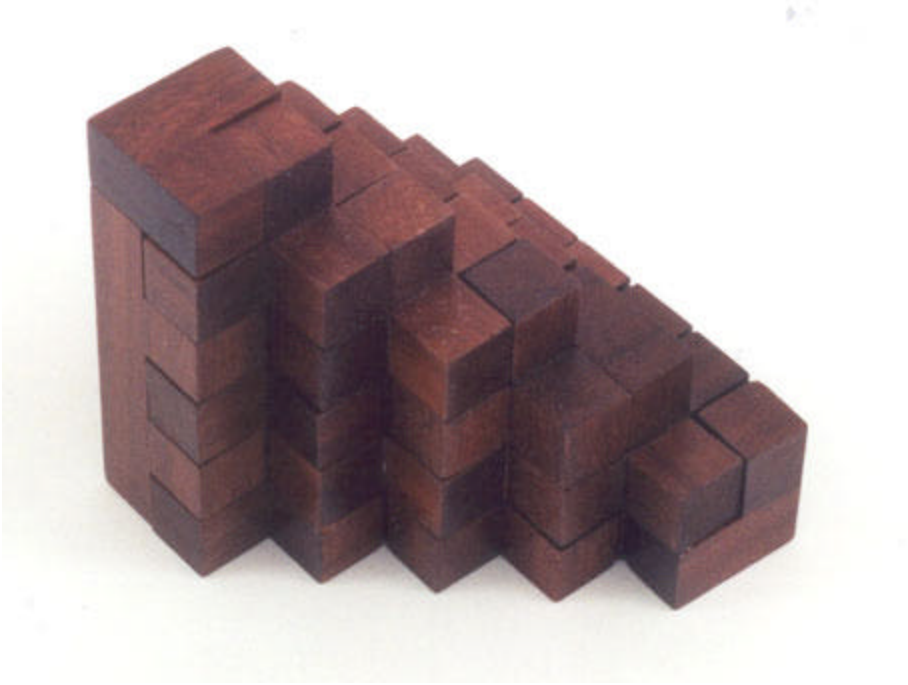
Puzzle Goal:

Construct the double stair

Materials:

cedar wood

Classification: Interlocking assembly



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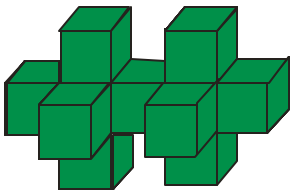
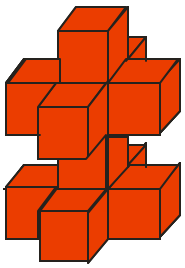
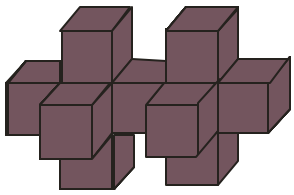
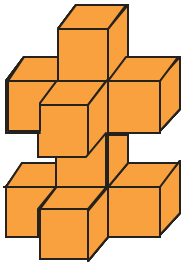
07 Double Stair

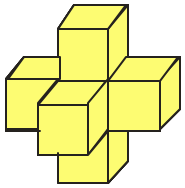
Puzzle Solution:

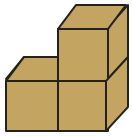
1. 

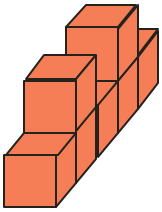
2. 

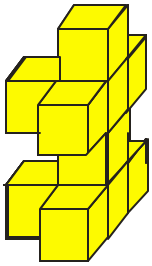
3. 

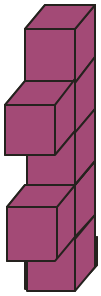
4. 

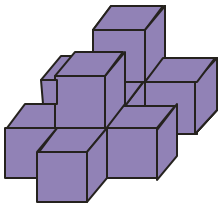
5. 

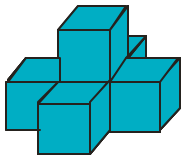
6. 

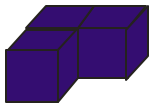
7. 

8. 

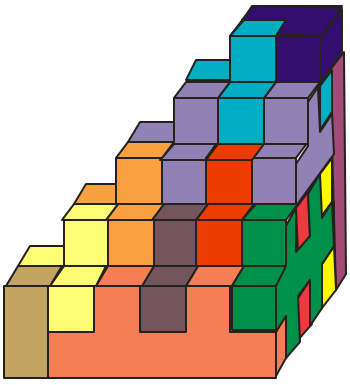
9. 

10. 

11. 

12. 

This is the finished puzzle turned 90 degrees in the clockwise



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08

Sculpture Puzzle

Puzzle Goal:

Construct the abstract sculpture

Materials:

cedar wood

Classification: Interlocking assembly

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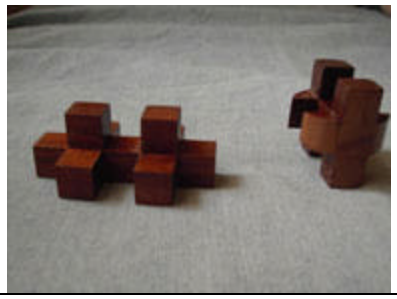
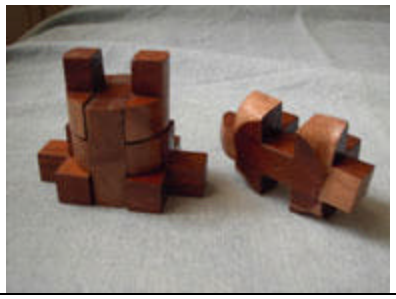
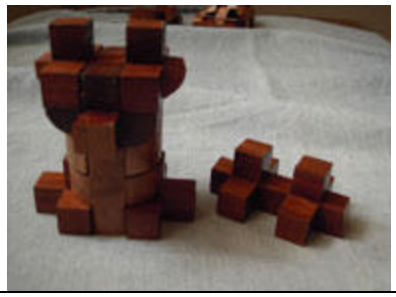
08

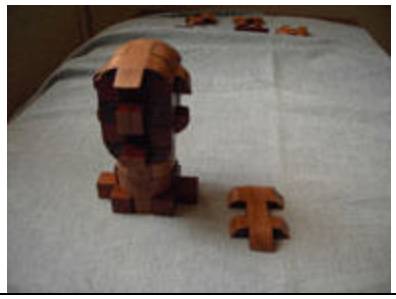
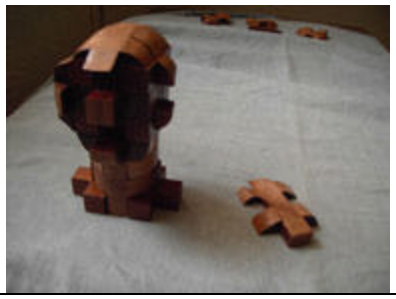
Sculpture Puzzle

Puzzle Solution:







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09

Crystal Cube

Puzzle Goal:

For each challenge, all the pieces of rope must match with another piece of rope in the adjacent cubes. One objective in parts 3 and 4 is not possible!

1) Assemble a cube where the bottom four cubes are yellow cubes and the top four cubes are blue.

2) Assemble a cube that the color of neighboring cubes always alternates.

3) Assemble a cube with exactly four closed loops exist, and:

a) has the pattern of #1

b) has the pattern of #2

4) Assemble a cube with only one closed loop, and:

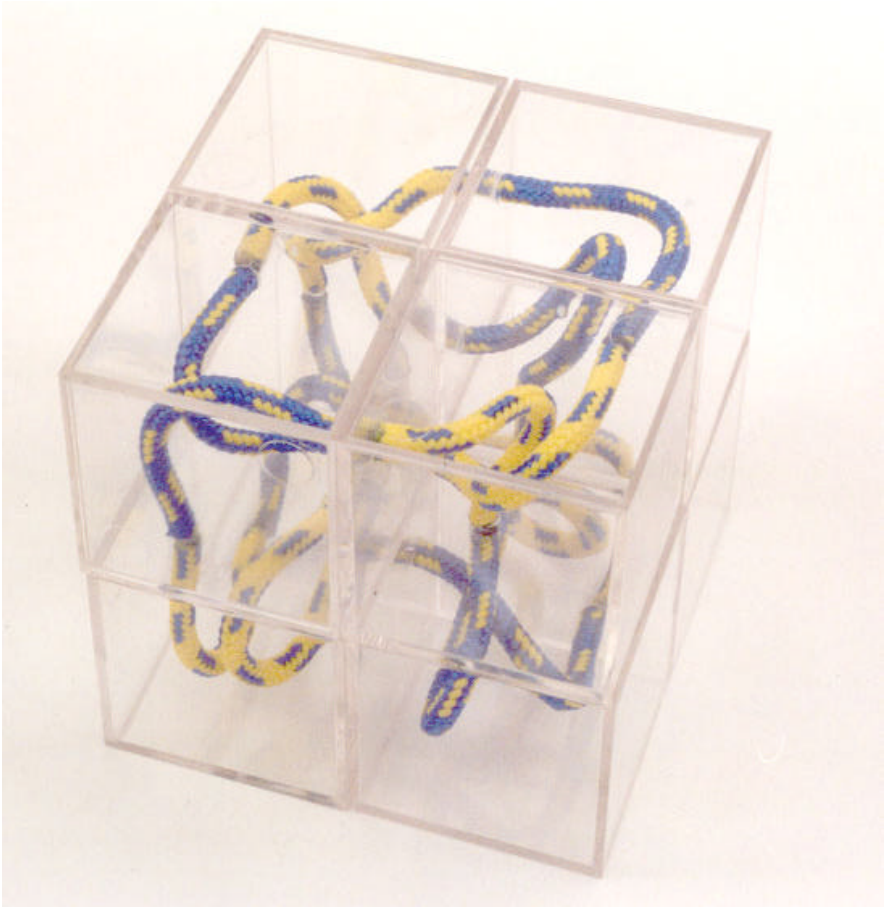
a) has the pattern of #1

b) has the pattern of #2

Materials:

Plastic cubes and rope

Classification: Put Together



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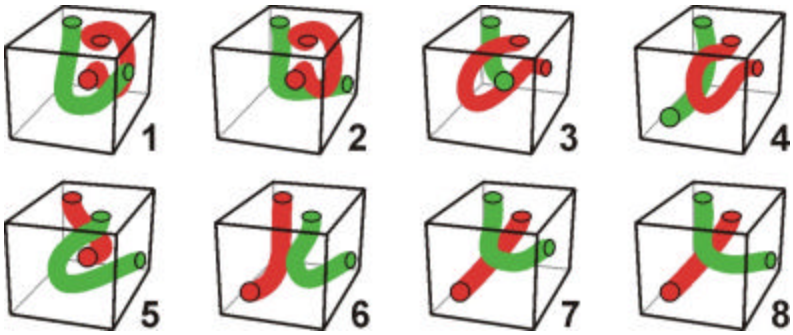
09

Crystal Cube

Puzzle Solution:

Hint: Assembling a cube
Put all the small cubes in front of you so that the face of each cube shows two ends of rope pointing upwards. Now put together four cubes (the color doesn't matter) so that they will form half of a big cube (2 x 2 x 1). Now you can put the two halves on top of each other.

Coding the small Cubes into Numbers:



There are eight different cubes.

The diagram on the left shows the different cubes.

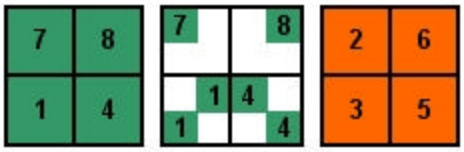
The puzzle has 128 solutions altogether.

How should you read the solutions below?
The left square shows the codes of the cubes in the lower layer.
The middle square shows the pattern of the “ends of the ropes” which can be seen on the top of the lower layer.
The right square shows the codes of the cubes in the upper layer.

Please bear in mind that the colors used in the solution may differ from the colors of your cubes.

Here are some solutions for the objectives 3) and 4):

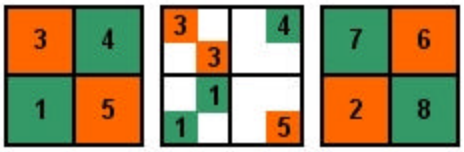
Objective 3-a)



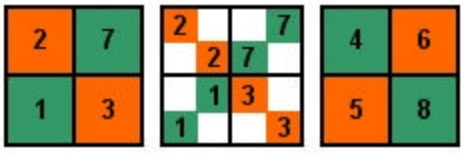
Objective 4-a) is impossible

NO SOLUTION

Objective 3-b)



Objective 4-b)



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10 Dipole Dilemma

Puzzle Goal:

Take the supplied 28 magnetic spheres and place them in the center tray so they lie completely flat. The plastic cover may not be used to keep the magnets in position as part of a solution. There are two unique solutions.

Materials:

Cherry and Walnut wood;

Gold-plated neodymium magnets;

Plastic case

Classification: Packing/Dexterity

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10

Dipole Dilemma

Puzzle Solution:

1. Begin with circle of 28 magnetic spheres.

2. Remove five spheres and set aside so they don't interact with remaining spheres.

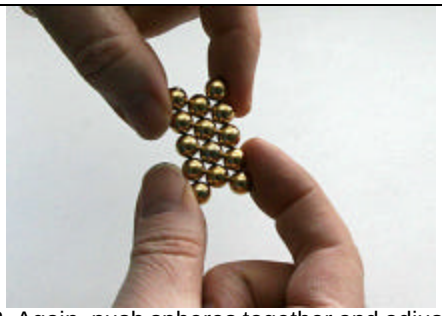
3. Remove four spheres. Make sure they face in same direction as first group of five.

4. Remove a second strip of five spheres. Do not let any of the strips touch each other before the next step.

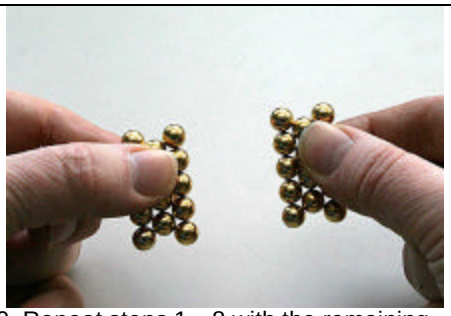
5. Hold a group of four and a group of five together. Orient them so they repel, as shown.

6. Push spheres so they stay together. Note how they are nested in a close, alternating fashion.

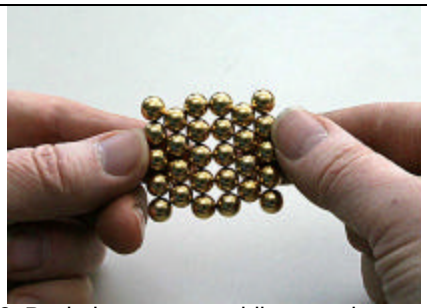
7. Hold the second strip of five against the first assembly. They should repel each other, as shown.



8. Again, push spheres together and adjust so they stay together.



9. Repeat steps 1 – 8 with the remaining 14. Place the two assemblies together as shown. If they repel each other, invert one and try again.



10. Push the two assemblies together. They should lock together and remain flat. Place in puzzle tray.

Note: If at any time during the assembly the magnets slip, become prematurely stuck together, or touch at all in the wrong places, **go back to step 1 and begin the whole process again by putting the magnets together in a chain**, Otherwise, you're apt to get the situation shown at right (or a variation of it). In this case, some or all of the corner magnets "fly away" from the main structure. When this happens, the magnets usually cannot be made to stay in place except by starting over. This assembly won't fit in the tray. This behavior seems to be caused by a hysteresis effect in the magnets. If the magnets are assembled asymmetrically, the corner spheres often fly out as shown at right. The solution described above ensures that they will be assembled symmetrically.

Mismatched magnets (See note at left)

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11

Gizmo Gears QED

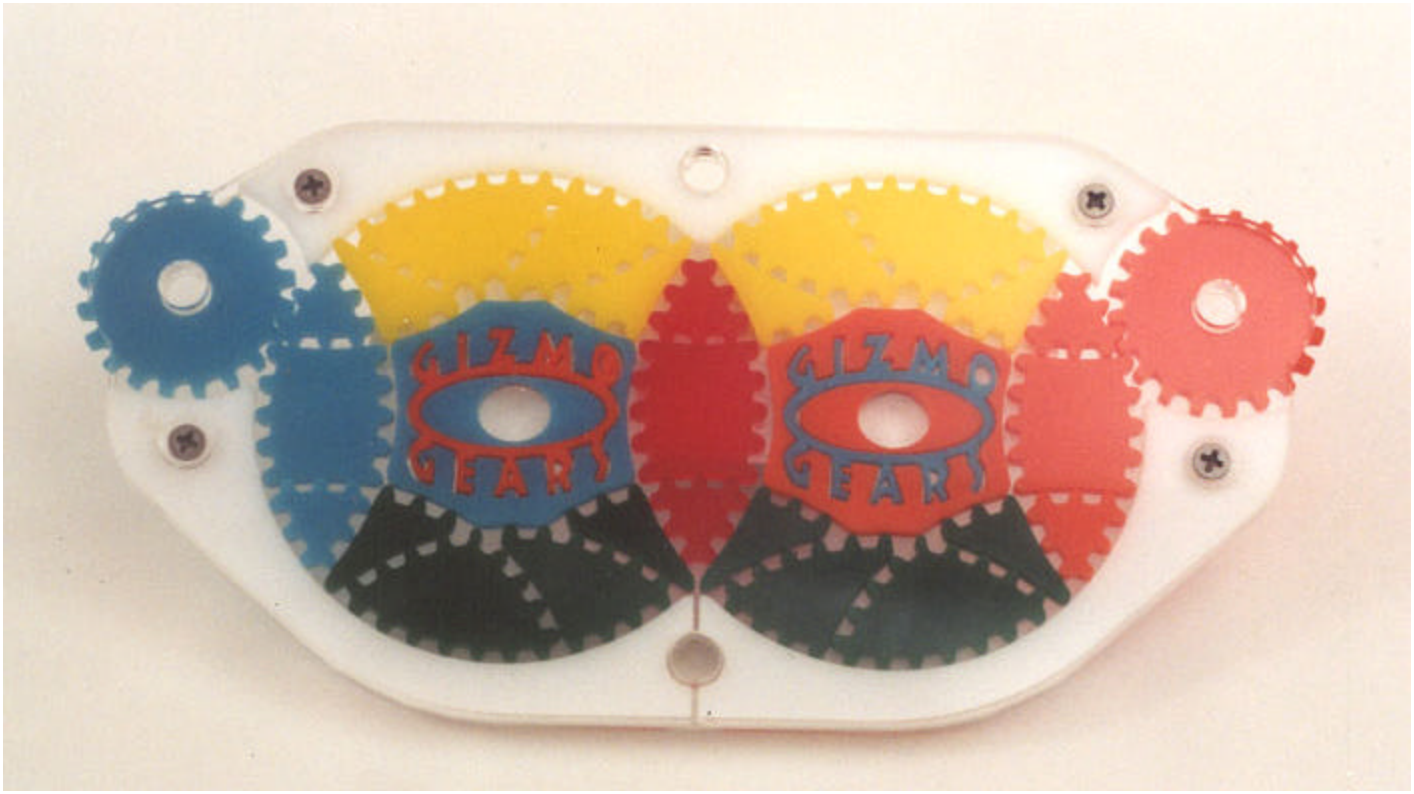
Puzzle Goal:

Mix up the pieces, then try to get back to the unmixed or starting configuration

Materials:

Acrylic plastic, in various colors, and stainless steel screws

Classification: sequential movement



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11 Gizmo Gears QED

Puzzle Solution:

Get the three triangle-rectangle associated pseudo shapes (each is a football shape of two triangles and a rectangle) back to their correct positions, and the rest of the puzzle usually ends up fully solved. Thus it is the only known rotary puzzle of this complexity that is almost completely self solving. In case it is not fully solved usually just a few simple moves will complete the solution. At the present time this has always worked and the puzzle has never been difficult to solve. Someone may get it into a configuration that is difficult to solve, but this is not believed possible at present. Thus, it has a magical seeming property, and you can easily use it to trick someone, who has not seem it before, into thinking you are a master rotary puzzle solver.

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12

Flip Side

Puzzle Goal:

Change the face picture from Dog to Cat and then Cat to Dog.

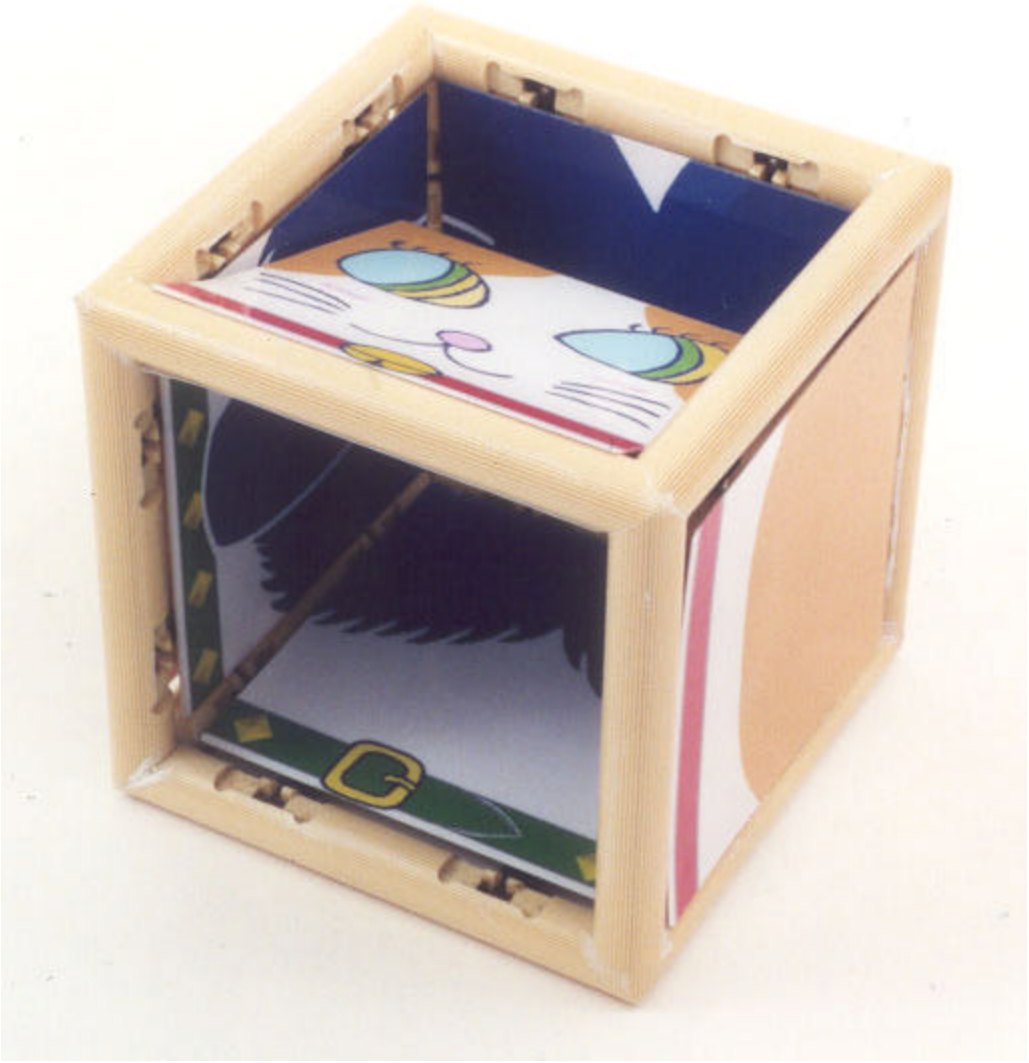
Materials:

ABS, MDFboard

Classification: Moving Side Puzzle

Notes:

Please be careful of the delicate mechanism.



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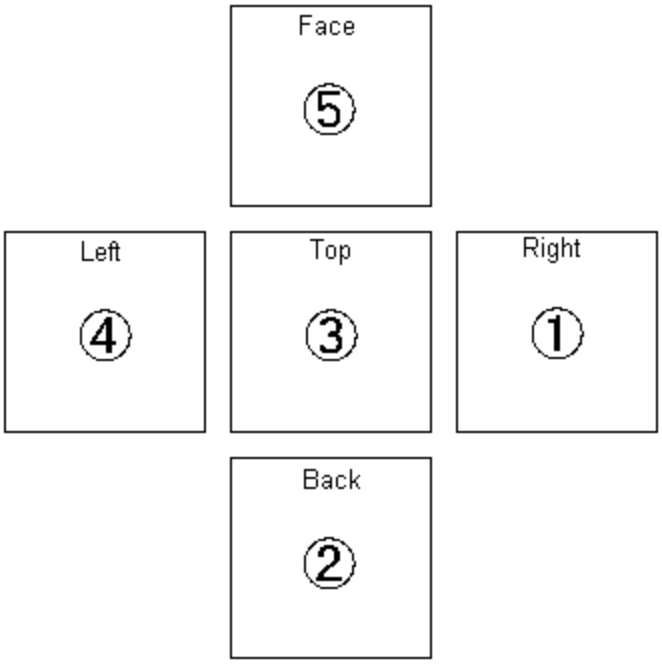
12

Flip Side

Puzzle Solution:



<Filp Order>

Ex. : ① — ③ — ② — ③ — ②

⑤ — ② — ⑤ — ④ — ③ — ⑤

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13

EXPLORE

Puzzle Goal:

Place the blocks so that red squares on the board are covered by the blocks and the red squares of the blocks face upward (there are multiple ways of doing this).

Blocks are then moved by "rolling" them edgewise to empty, adjacent squares of the board (a new color of square will then be face up on the block, and that block will be covering completely new squares of the board). After a move, the blocks must be completely contained within the board's boundaries (no part of a block may hang over the edge of the 7x7 board).

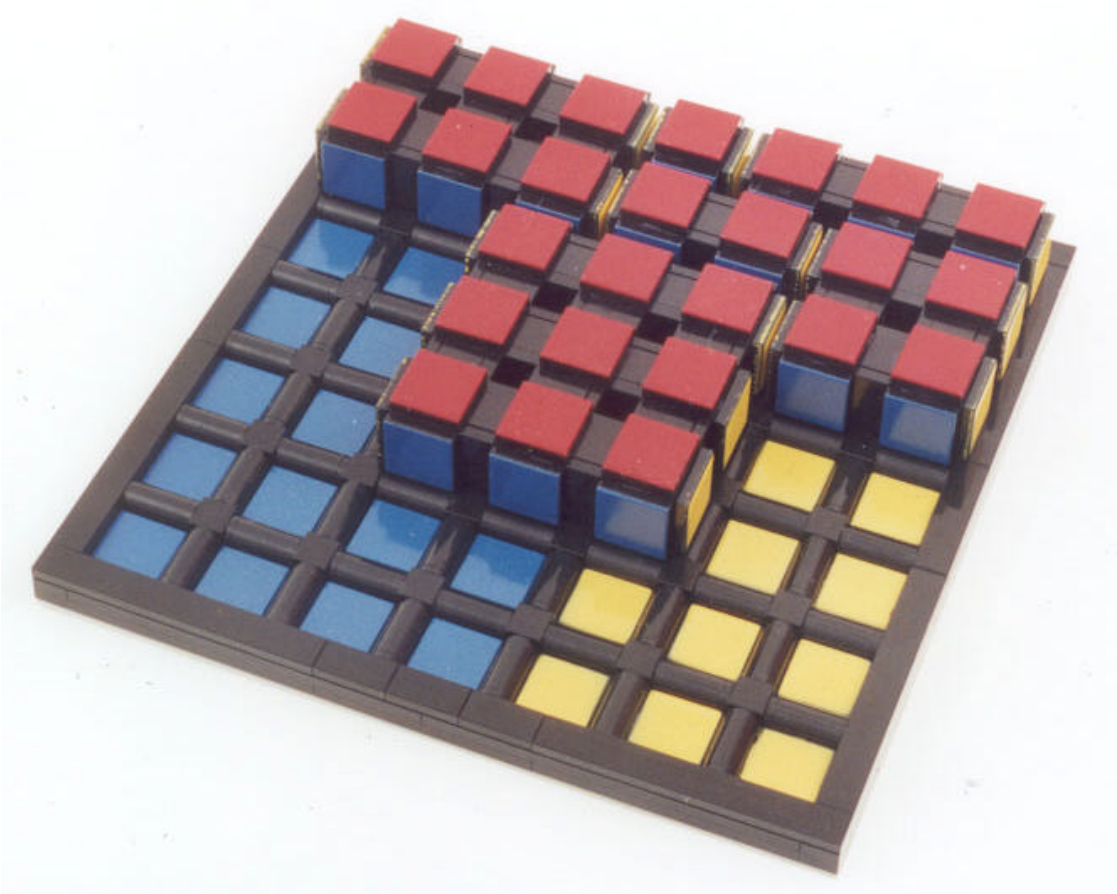
The final goal is to maneuver the blocks so that all of the yellow squares of the board are covered and, at that point, all of the blocks show yellow squares face up. Before reaching the final goal, however, one must first reach an arrangement ("interim goal") that covers all of the blue squares of the board with the blocks all showing blue squares upward. The goal is to accomplish the final goal in as few moves as possible.

Note that after intermediate moves (between "start", "interim", and "final goal"), face-up squares on blocks need *not* color-match the squares of the board they are covering -- this is only a requirement at the start, interim and final goal stages.

Materials:

ABS plastic

Classification: Rolling Block/Maze



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13 EXPLORE

Puzzle Solution:

Below is one possible solution. In the notation below, the six blocks are referred to by their unique sizes (largest area they may cover when lying flat): 9, 6, 4, 3, 2, 1. A move is indicated by a "#d" code where "#" is the block moved, and "d" is the direction moved (so, "3R" would indicate rolling the 3-block to the right).

The starting arrangement assumes that the board is oriented such that red squares dominate the left side of the board; uncovered blue and yellow empty spaces of the board (at the start) are shown by "b" and "y" respectively. The square blocks can be oriented in a couple of ways. In the starting position this example solution, it is assumed that the 9 and 1 blocks have blue side-squares along their left/right edges, while the 4 block has its blue side-squares along the top and bottom.

An ASCII representation of the board is below (fixed-width font need; this is also shown in the accompanying photograph):

```
999yyyy
999yyyy
99944yy
22144bb
66333bb
66bbbbb
66bbbbb
```

Here is a solution in 64 moves:

```
3D,3D,4R,4D,4L,4U,4R,4D,4D,1R,
1R,1R,1U,1U,2R,2R,2R,6U,6R,3U,
3R,6D,6D,9R,9D,9L,9U,9R,2L,2L,
3L,3L,9D,9R,3R,2R,2R,2D,1D,1D, <-- (blue squares covered at this point --
9U,1U,1U,1U,3L,6U,6U,6U,6R,4L,      "interim goal" achieved after 40 moves),
4U,4U,4U,4U,2L,2U,2L,2U,2U,2R,
3U,3R,3R,3U
```

The two included photographs show Explore puzzle in the initial start arrangement above, and then the board after the first move (3D).

Better solutions are known to exist.

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14 Mace

Puzzle Goal:

Determine how the object was made. No glue was used in any part of the puzzle.

Materials:

Boxwood nails and Walnut rings

Classification: Impossible object

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14 Mace

Puzzle Solution:

N/A

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15

Janus

Puzzle Goal:

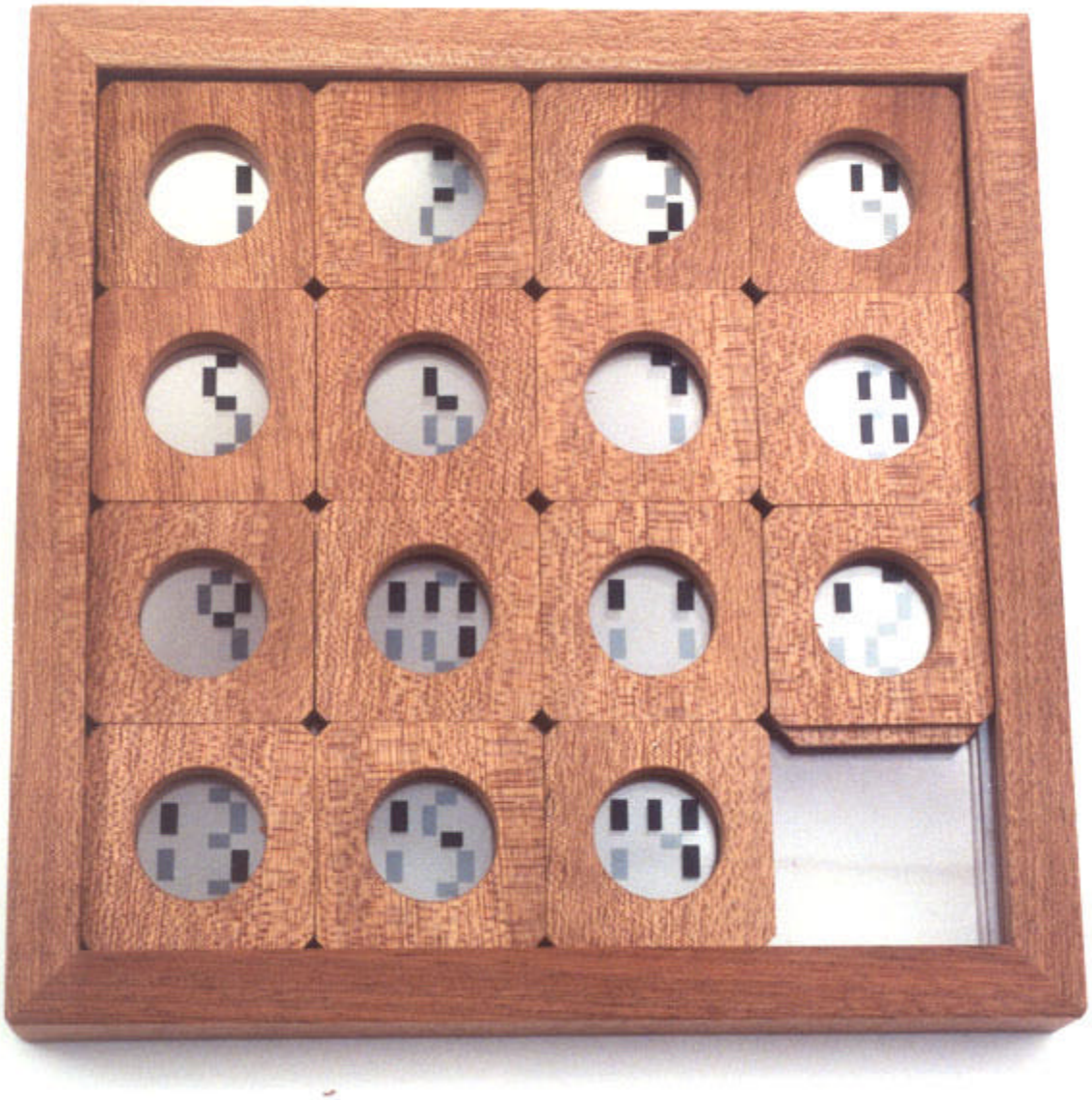
A -Arrange the two-sided sliding block puzzle so that the numbers 1-15 are shown in the correct places.

B – Arrange the two-sided sliding block so that 1-15 are displayed, but with the 14 and 15 reversed (Starting position)

Materials:

Wood and acetate

Classification: Sliding block



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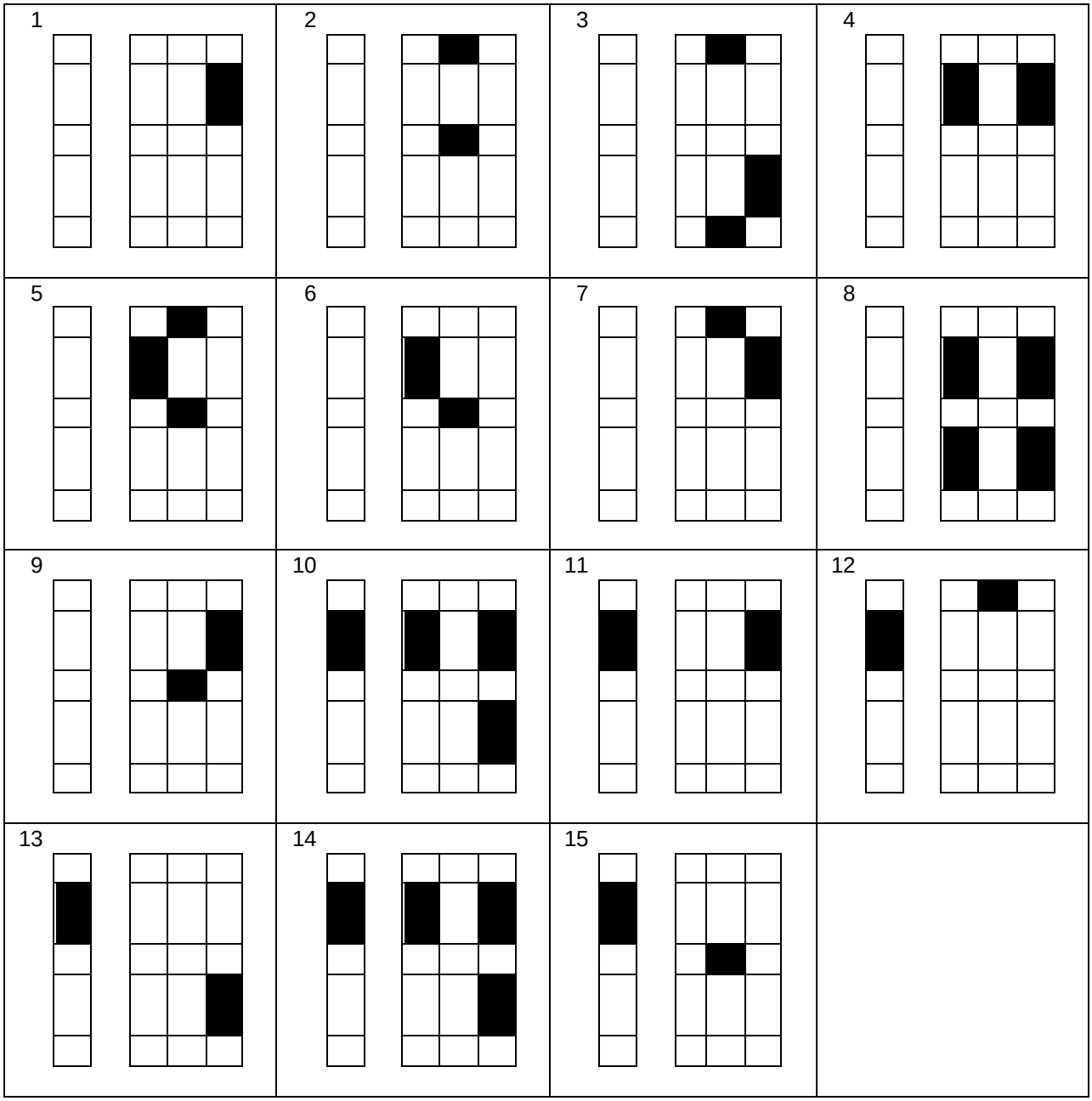
15

Janus

Puzzle Solution:



Note that pieces 10 and 14 are the same, so puzzle can be completed with 14 and 15 switched

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16

Cubigami

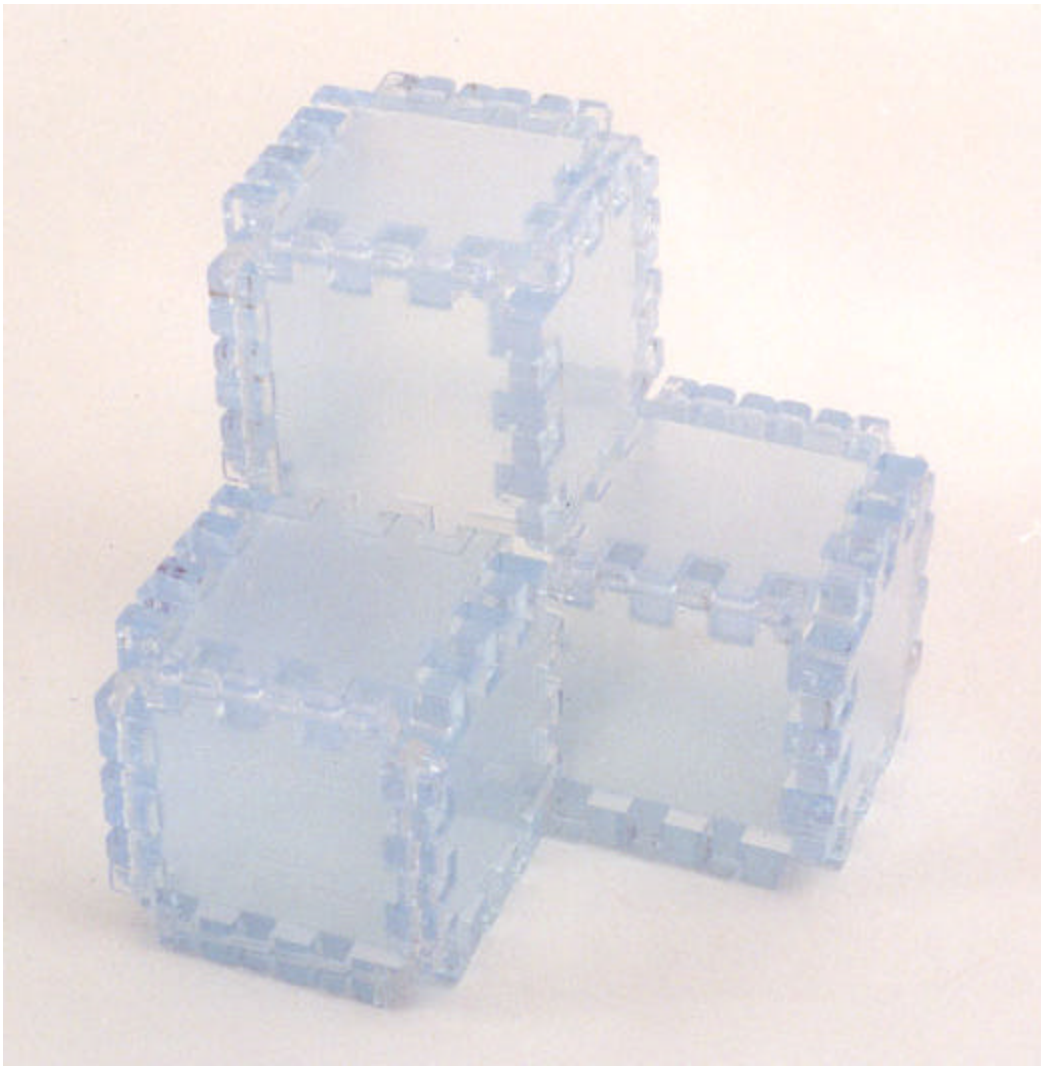
Puzzle Goal:

Fold the net into all seven tetracubes. (The eighth tetracube, the "O", has only 16 sides and can be made only with a paper-thin net).

Materials:

Acrylic

Classification: 1.3 – Miscellaneous Put-Together puzzle



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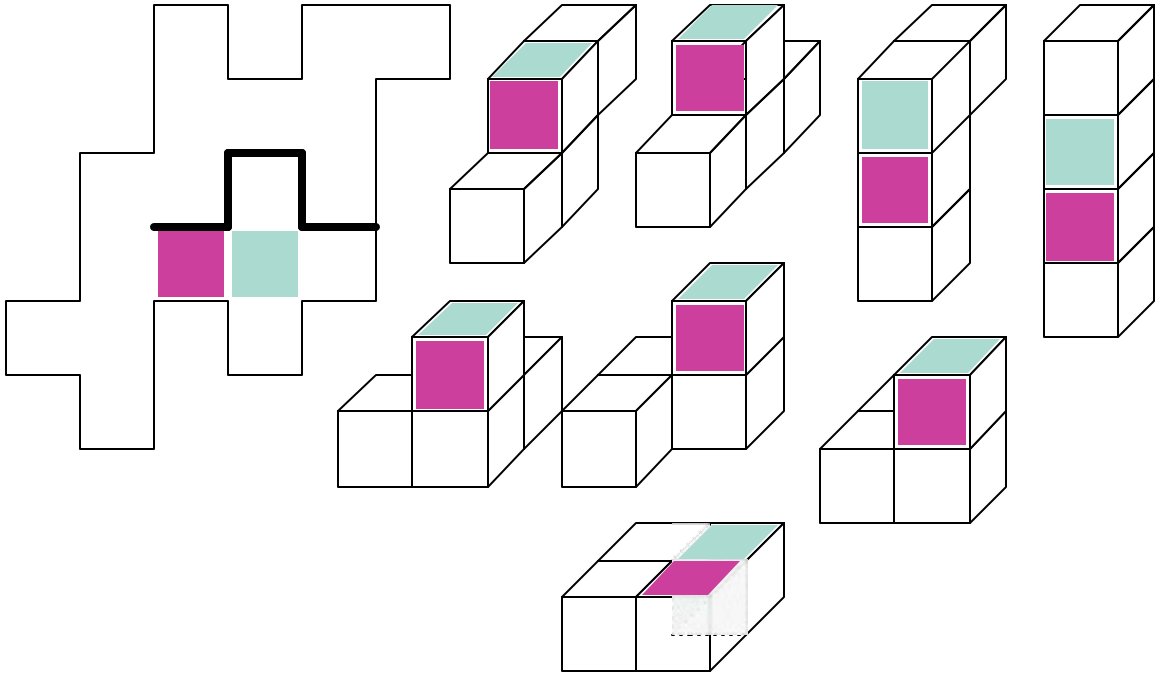
16 Cubigami

Puzzle Solution:



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17

Turkey Tetracube Teasers

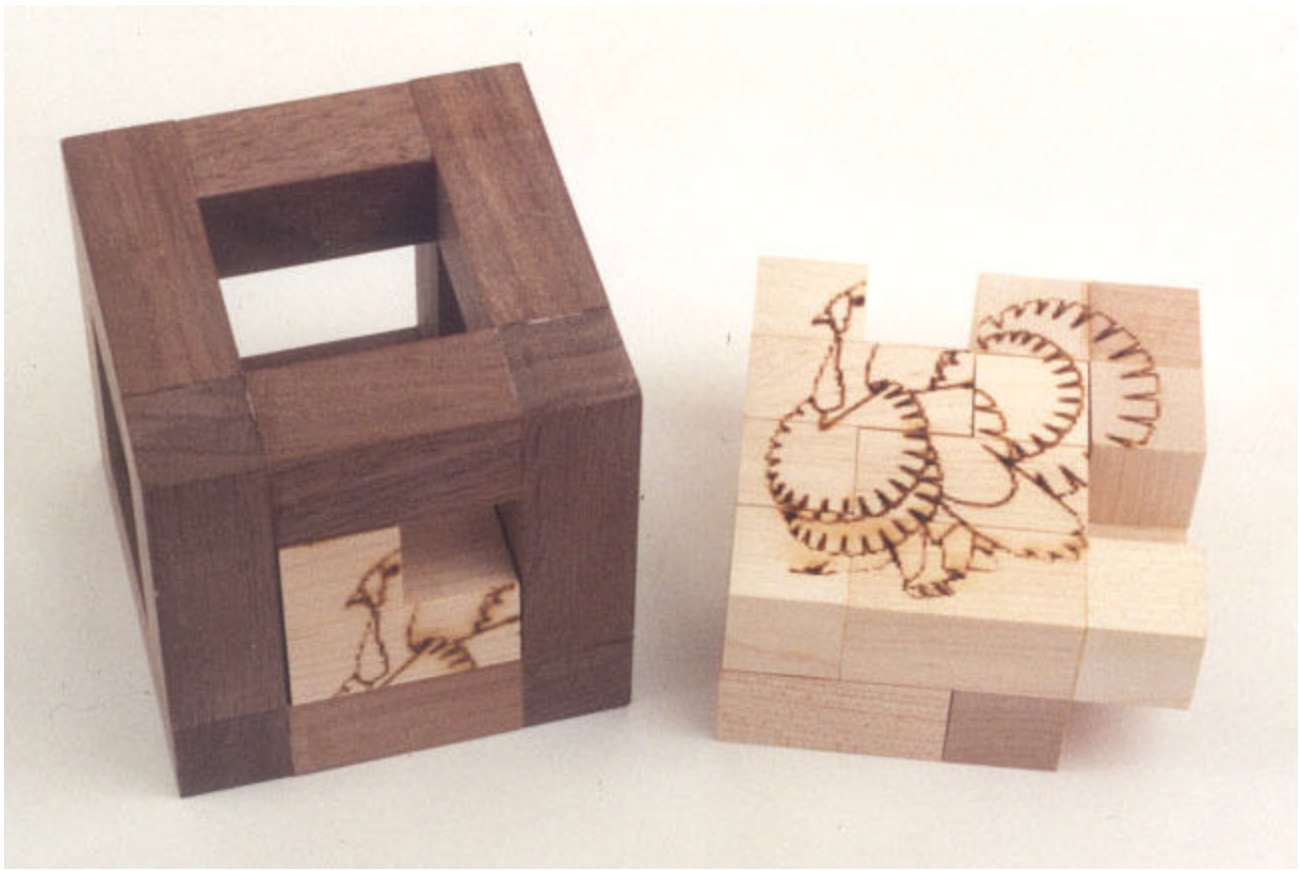
Puzzle Goal:

1) **Place the eight tetracubes to make a "jigsaw" turkey picture.**
2) **Form the eight tetracubes into a 2x2x8 tower.**
3) **Form the eight tetracubes into a rectangular block so that NO turkey-part pictures show on any surface.**
4) **Place the eight tetracubes into the frame.**
5) **Start with the empty frame in its plastic container; place the eight tetracubes into the frame, only working through the top hole.**

Materials:

Walnut and maple

Classification: 3D Assembly



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17 Turkey Tetracube Teasers

Puzzle Solution:

1.

Upper Layer	Lower Layer
N N R R	I N N T
L O R T	I O R T
L O S V	I S S V
L L V V	I S S V

2.

O O	L L	N R	N L
O O	N I	N I	S I
S S	R R	V T	V V
S I	R T	R T	V T

3.

Upper Layer	Lower Layer
N S S L	T T T I
N N S L	V T S I
V N L L	V V R I
O O R R	O O R I

4.

Top Layer	3rd Layer
• • • •	• O O •
• V V •	R R V *L*
• • • •	R I S *L*
• • • •	• S S •

2nd Layer	Bottom Layer
• O O •	• • • •
T T T *L*	• T N •
R I N *L*	• I N •
• S N •	• • • •

5.

Same final position as #4. Insertions however must be performed in a strict order. Some pieces must go inside then be turned to reach their predestined position.

Order of insertion:
N-*L*-O-T-R-S-I-V

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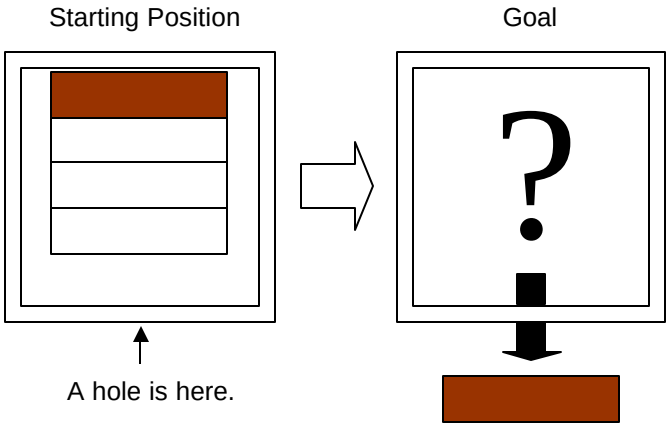
18

Rectangular Jam

Puzzle Goal:

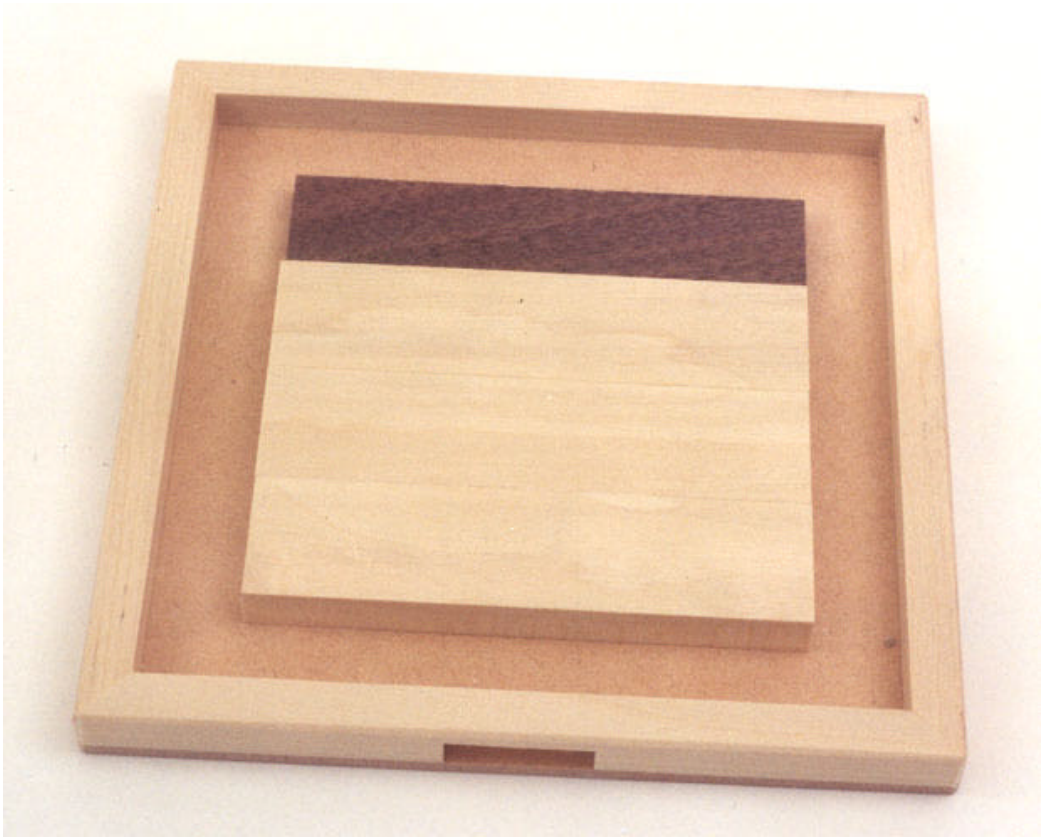
Slip the brown piece through the hole in the front of the frame (only the brown piece can go through).



Materials:

Wood and MDF

Classification: Sequential Movement



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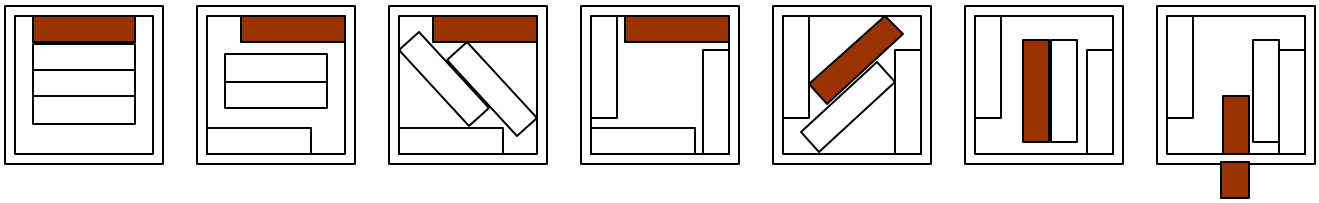
18 Rectangular Jam

Puzzle Solution:



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19

Caged Pyramid

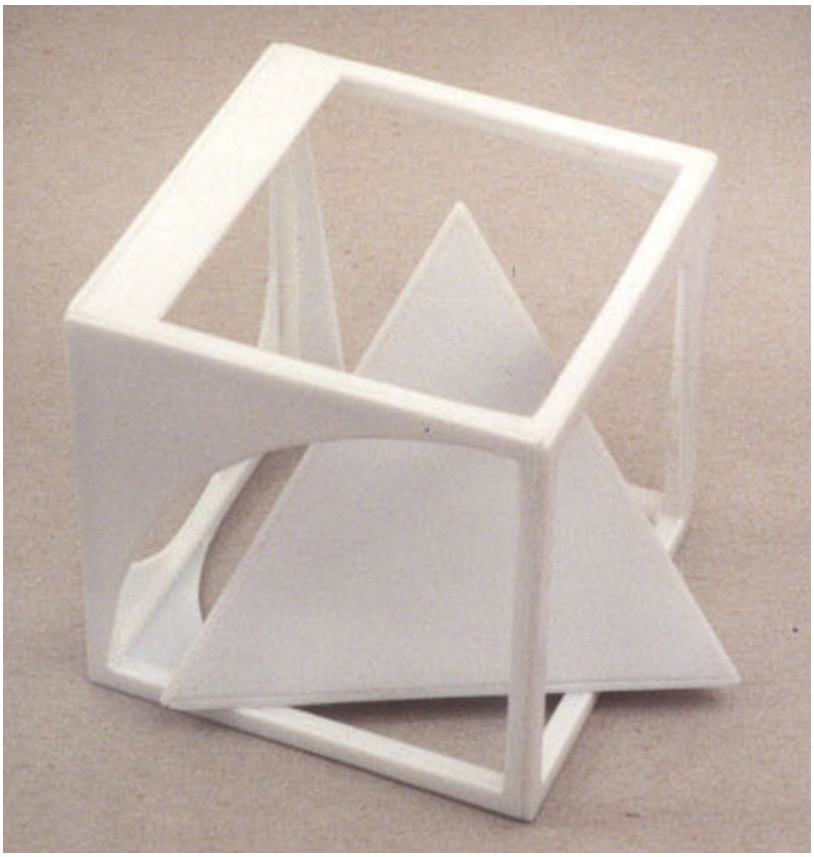
Puzzle Goal:

Remove the pyramid (regular tetrahedron) from the cage.

Materials:

Polystyrene

Classification: Take-Apart



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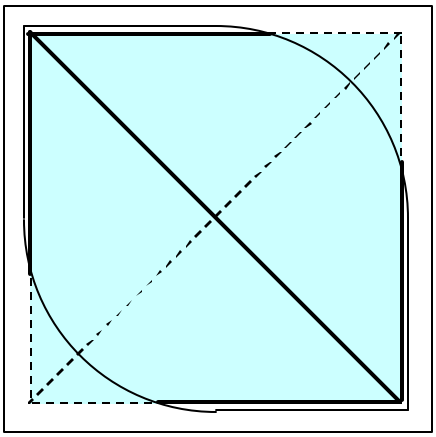
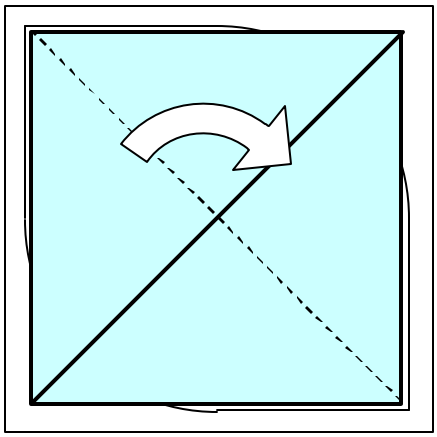
19 Caged Pyramid

Puzzle Solution:

The pyramid can be removed only through the hole shaped like a lemon. First, place the pyramid at the position as shown in the left diagram (Only the lemon-like hole and the pyramid are drawn in the diagrams). Secondly, pull the pyramid out just halfway and turn it a 90-degree swing as in the right diagram. Then you can pull it out fully.





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20

Memory Drawers

Puzzle Goal:

Discover the pattern for opening and closing the drawers.

Careful: you need to open and close the drawers perfectly.

Materials:

Walnut, maple, silky oak, birch, rosewood, acryl

Classification: Sequential movement

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20 Memory Drawers

Puzzle Solution:

This work memorizes 120 (The factorial of 5) kinds of turn to open the drawers. The big base is full of 30 device plates. The plates move vertically and horizontally, and change the arrangements when you open or close the drawers. This work memorizes the turn you closed the drawers just before automatically, and change the turn to open the drawers next. In theory, 6 kinds / 25 plates are needed to realize this system. But actually, instead of that, 3 kinds / 30 plates are used. It's a full-scale work that matches his previous "Super-CUBI".

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21

Chinese Fang

Puzzle Goal:

Disassemble and reassemble the structure.

Materials:

Walnut

Classification: Burr Puzzle

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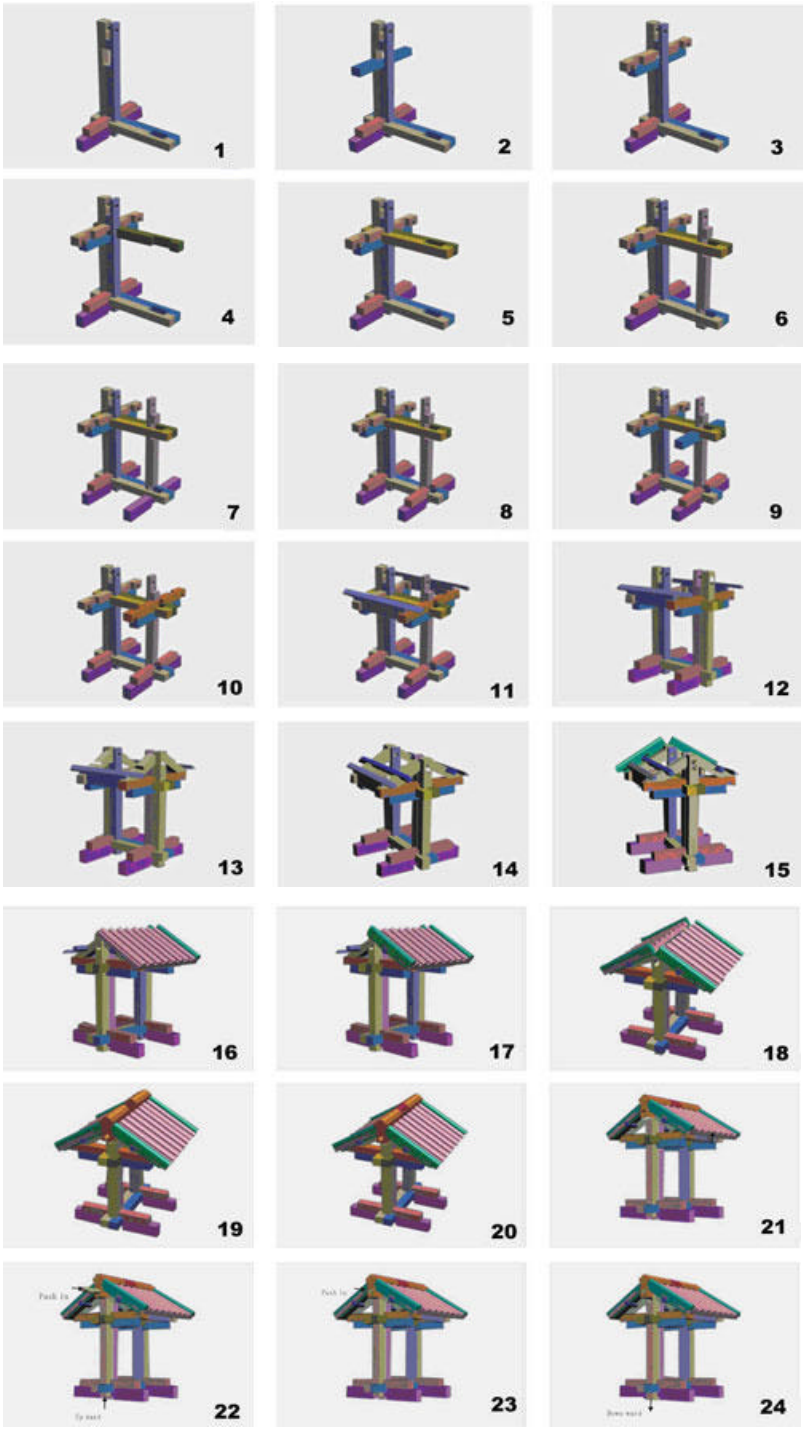
21

Chinese Fang

Puzzle Solution:



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22 Egg Fool Young (and Old) Puzzle

Puzzle Goal:

Can you make the egg stand on its end?

Materials:

wood and metal

Classification: Dexterity

Notes:

This appears similar to the Columbus Egg, but the internal mechanism is a new design.

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22 Egg Fool Young (and Old) Puzzle

Puzzle Solution:

Inside the egg is a ball which normally prevents the egg from standing on its flat end. To solve the puzzle, hold the egg upside down (flat end facing up) with your thumb and fingers facing down, wait a few seconds for the ball inside the egg to stop moving, then swing the egg upwards in a 180 degree arc - bringing it to a gentle stop when the egg is perfectly vertical. WITHOUT TILTING THE EGG, gently place it down on a flat surface and it will stand on its end!

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23

FramEst 36

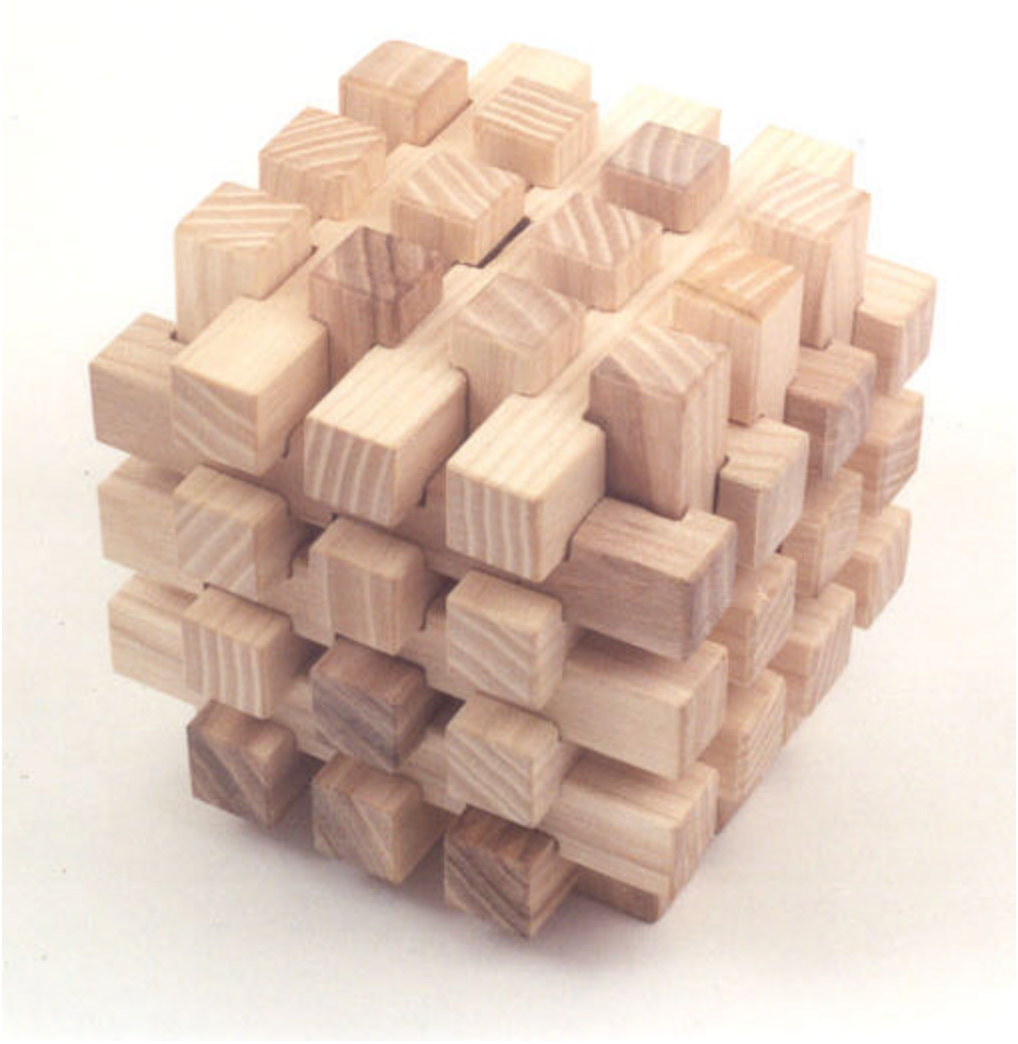
Puzzle Goal:

Disassemble and reassemble

Materials:

Ash tree

Classification: Burr Puzzle



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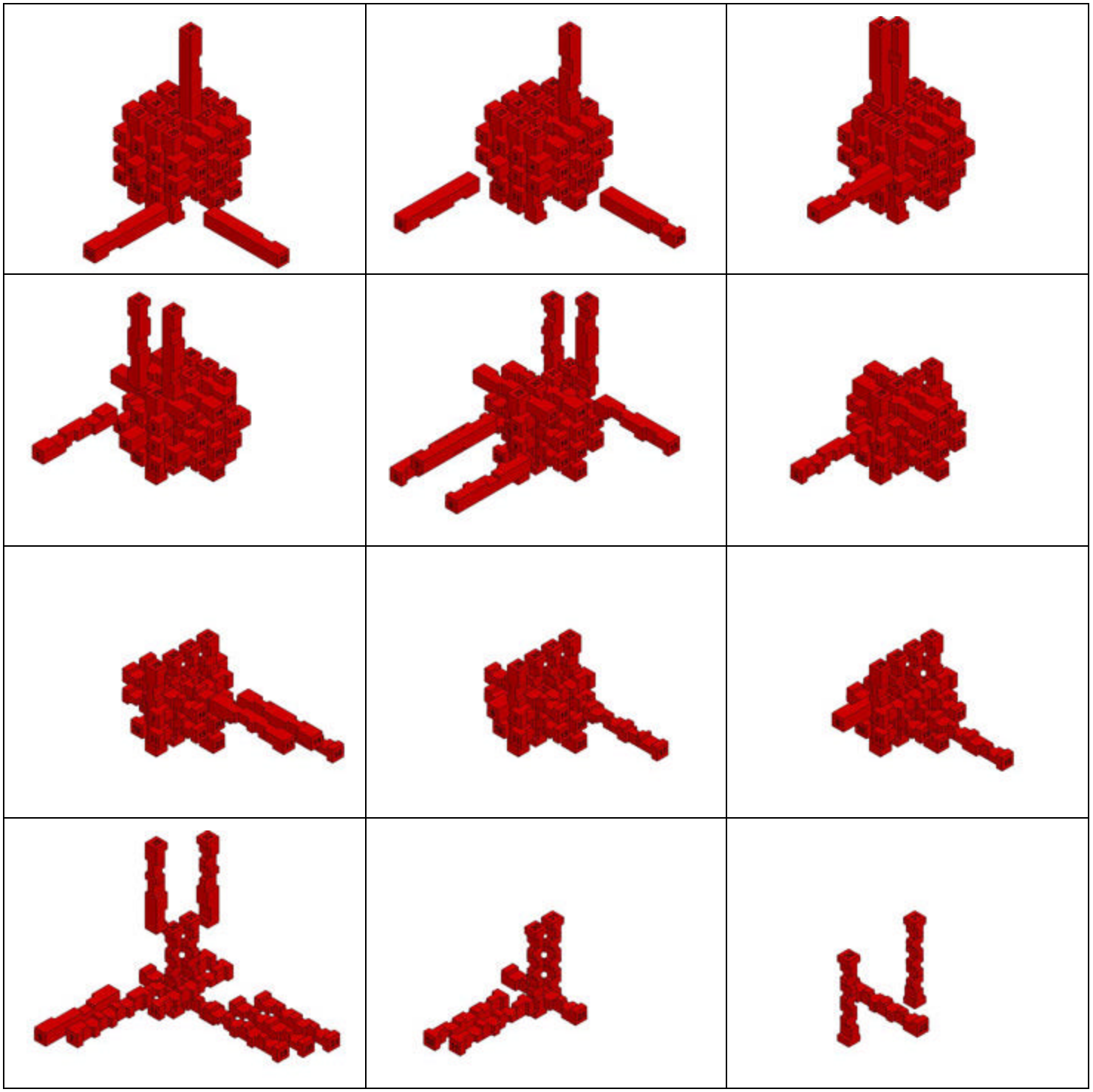
23

FramEst 36

Puzzle Solution:



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24

Comerio

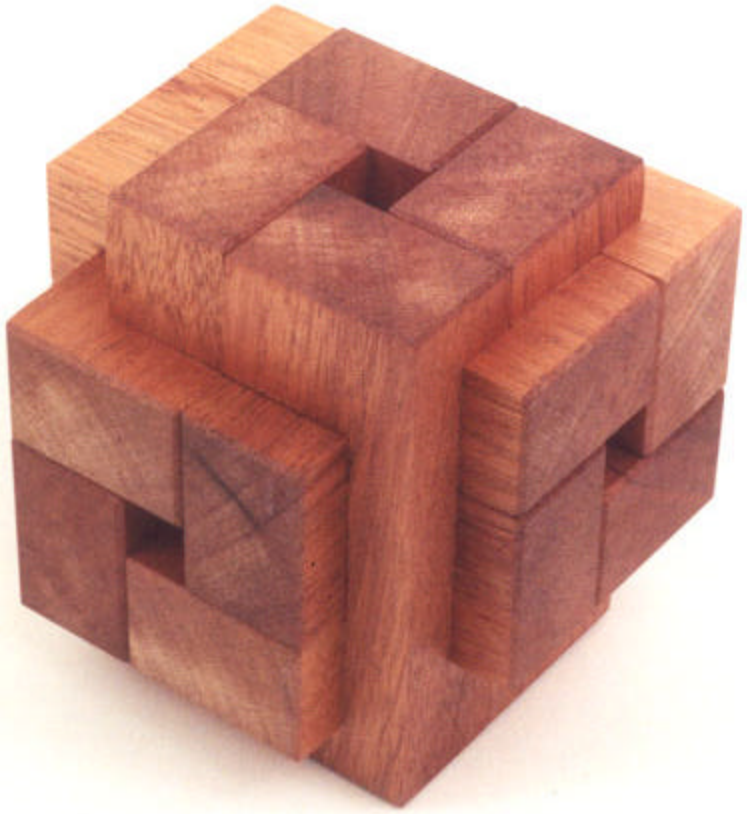
Puzzle Goal:

Disassemble and reassemble

Materials:

African Mahogany

Classification: Interlocking



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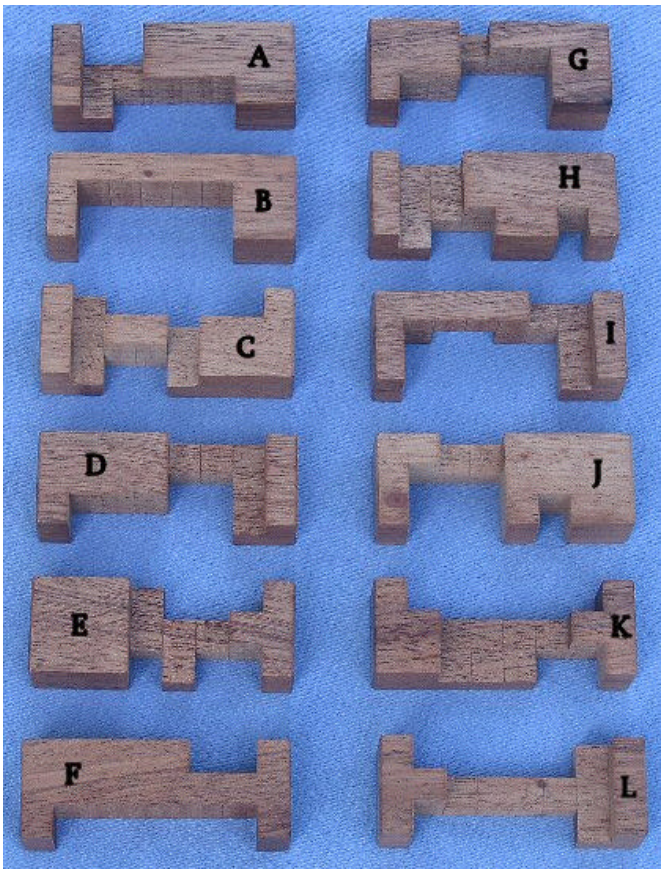
24

Comerio

Puzzle Solution:

We suggest that the sticks be marked using removable labels before starting assembly.

Step 1: Hold **G** front to back with the large notch facing right and the other notch facing up.
Step 2: Hold **K** side to side with the largest notch facing away from you and the smallest notch facing towards you. — Place **K** crosswise in **G**'s notch that faces up, slide it right.
Step 3: Hold **A** upright with the large notch facing towards you and the notch on the flat side facing right. — Place **A** in **G**'s notch, crosswise behind **K**.
Step 4: Hold **L** side to side with the notch on the flat side facing towards you, the larger end pointing right. — Place **L** directly behind **K**.
Step 5: Hold **E** front to back with the two notches facing down and the notch on the flat side facing right. — Place **E** directly over **G**.
Step 6: Hold **C** upright with the two notches facing away from you and the large notch facing left. — Place **C** directly in front of **A**.
Step 7: Slide **A** one half notch downwards.
Step 8: Hold **F** front to back with the large notch facing left and the other notch facing right with the small notch pointing towards you. — Place **F** directly on the right side of **E**.
Step 9: Slide **A** downwards.
Step 10: Hold **I** side to side with the large notch facing down, the large end pointing right. Place **I** directly over **K** into **C**'s small notch.
Step 11: Slide **A** upwards and align its notch with **F**.
Step 12: Slide **F** towards you as far as it will go.
Step 13: Hold **H** front to back with the two notches facing up and the other notch facing left.
Step 14: Hold **B** upright with the one notch facing left, the large end pointing up. **B** and **H** must be placed into the puzzle as a unit. Place **B** directly on the right side of **A**. — Place **H** directly on the right side of **G**. Slide them together up into the puzzle from underneath.
Step 15: Slide **F** away from you until its back end is flush with **L**.
Step 16: Hold **D** upright with the large irregular notch facing away from you and the other notch facing left. — Place **D** directly on the right side of **C**.
Step 17: Slide **F** and **D** away from you.
Step 18: Slide **A** upwards.
Step 19: Hold **J** side to side with the two notches facing towards you and the other notch down. — Place **J** directly over **L**.
Step 20: Slide **A** and **J** downwards and it's done!



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25

Ying-Yang

Puzzle Goal:

Open the ball and try to disassemble the six piece burr inside. Then rearrange the pieces and close the ball.

Materials:

Ball made from ash-tree; pieces inside made from beech; Ying and Yang made from maple and amarand.

Classification: Burr, take-apart

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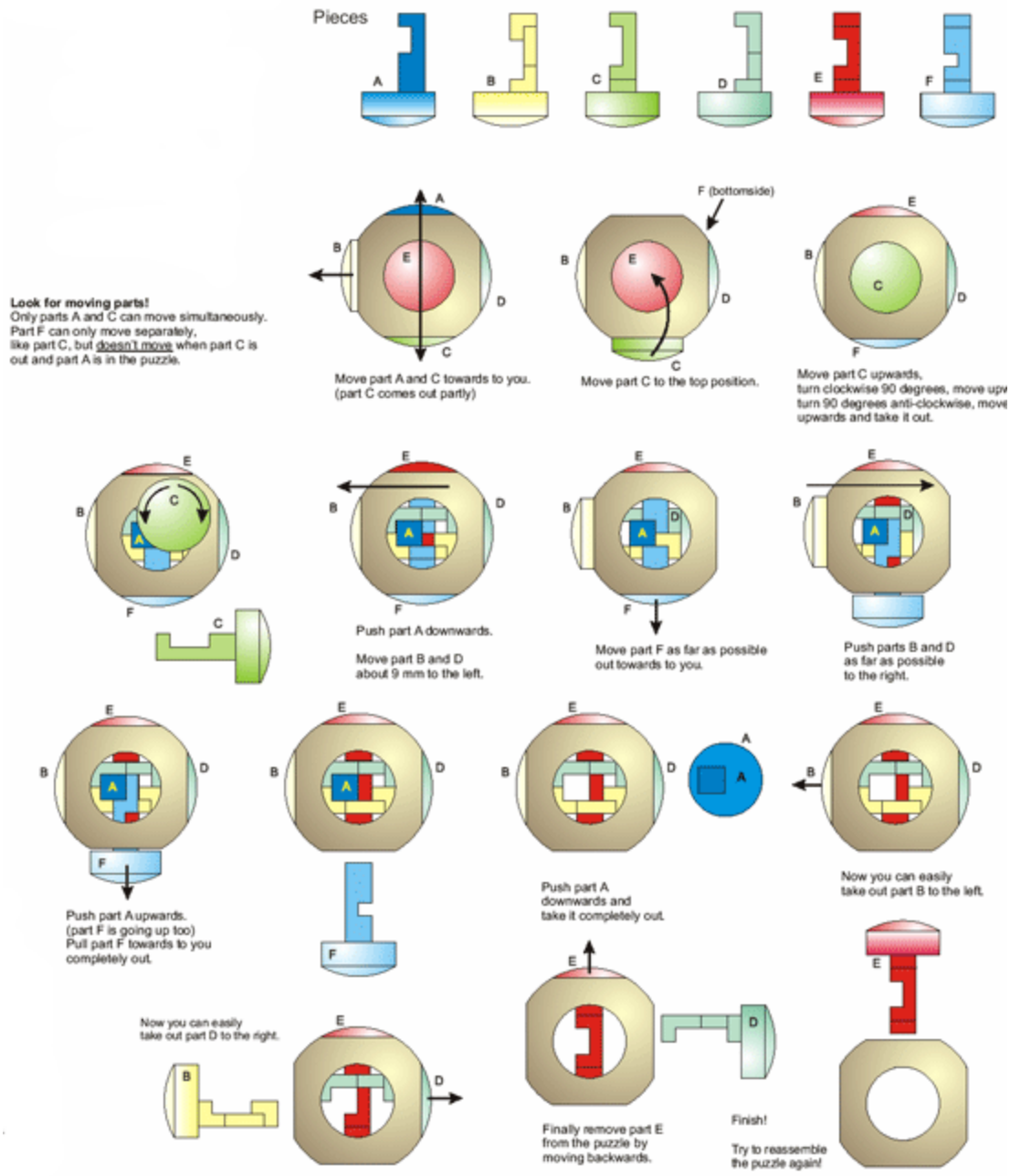
25 Ying-Yang

Puzzle Solution:



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26 Pattern Box

Puzzle Goal:

Open each end of the box

Materials:

Bubinga, Maple, Narra, Wenge hardwoods

Classification: Take apart

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26

Pattern Box

Puzzle Solution:

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27

Cubes & Ladders

Puzzle Goal:

The Cubes & Ladders puzzle represents a pueblo with various houses (cubes) and ladders which allow you to climb the various levels of the pueblo. The goal is to select 16 of the 30 pieces and arrange them so that there is a continuous path from the lower left to the top right.

You can only move from one platform to the next if there is a ladder between the platforms. You cannot move at the same level from one platform to the next when they are only touching at the corner.

There are 201 distinct paths connecting the lower left to the top right.

Given the 30 different pieces with 2 ladders each, there are 4377 ways to select 16 pieces that form one or more of those 201 possible solution paths.

The deck of cards contains 23 challenges, using a selection of the above 4377 sets of pieces.

Materials:

Red Alder wood for the board and pieces, and cherry wood for the box. Card printing stock for the cards.

Classification: Route Finding

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27 Cubes & Ladders

Puzzle Solution:

The back of each card has the solution to the challenge.

They are roughly ordered by increasing difficulty.

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28

Arc Angles

Puzzle Goal:

1. Assemble 5 arcs into a ring so the lines match on all edges and form a closed loop.

2. Assemble the 25 arcs into 5 rings so all the lines match.

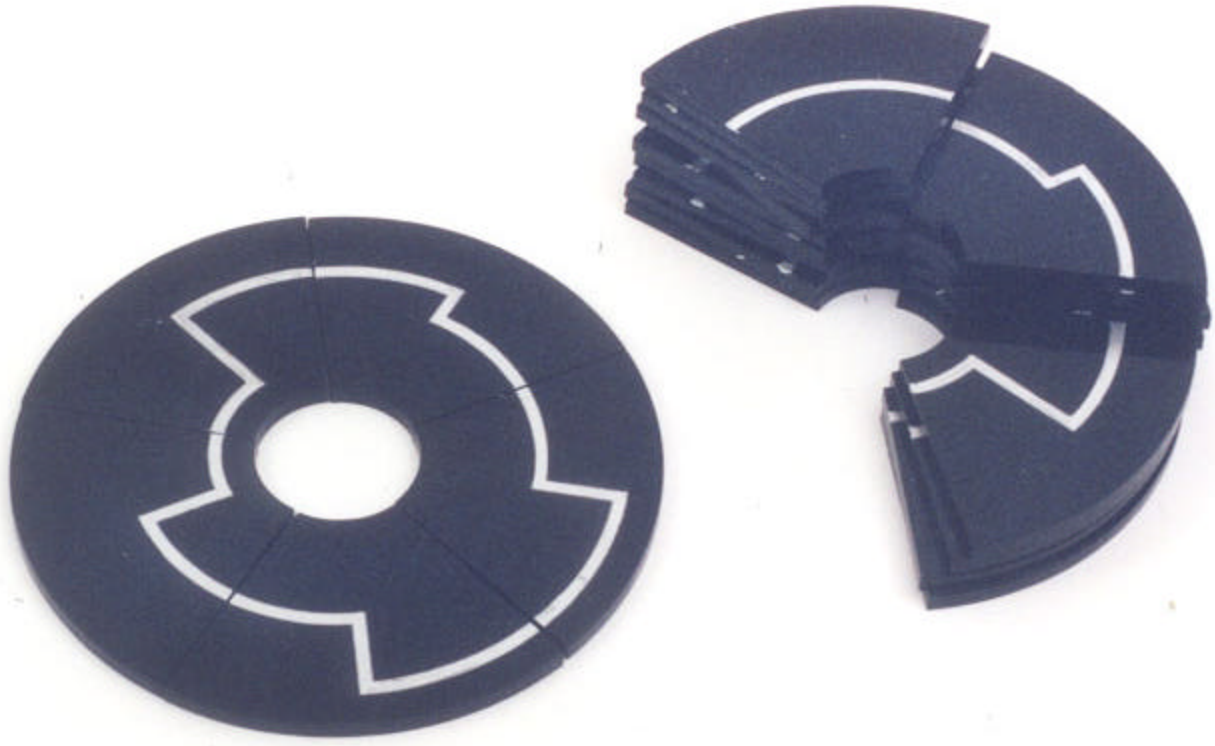
3. Assemble 15 arcs into a closed figure with lines forming a single matched loop. Note that the arcs may join on left or right edges to wind around in snake-like fashion. All lines must be joined – no loose or mismatched edges. Make two matched rings with the remaining 10 arcs.

4. Join all 25 arcs into one large closed figure with all 25 lines matching in a single loop. How many such shapes can you find?

Materials:

Black lasercut acrylic with sliver paths

Classification: path-forming put-together



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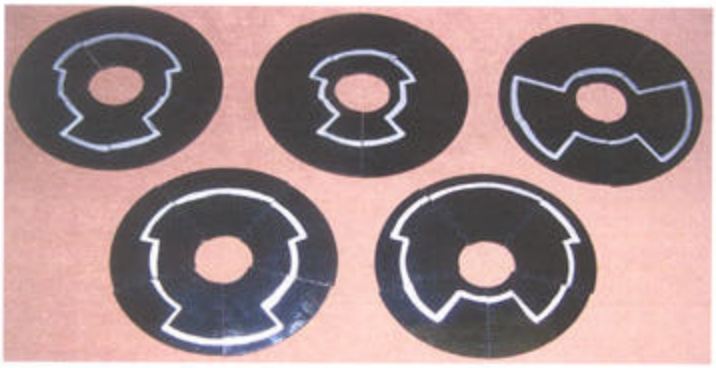
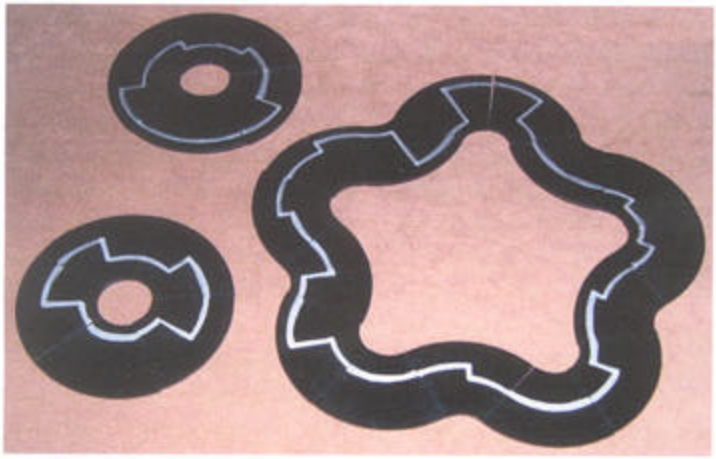
28

Arc Angles

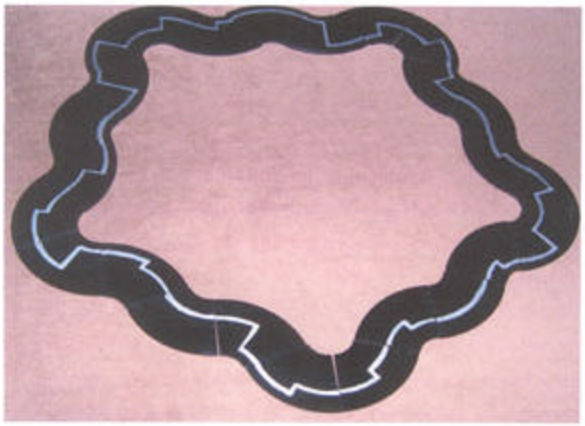
Puzzle Solution:



Five rings of 5 arcs each, with symmetrical path patterns



A 15-arc closed loop and two 5-arc rings, with matched paths.



The largest enclosed area in a closed loop with matched paths. Note that the "double" paths occupy symmetrically equivalent places on the centers of the sides of the wavy pentagon.

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29 Bollixed Briefcase Puzzle

Puzzle Goal:

Open the box.

No undue force is necessary.

Materials:

Aluminum case, steel balls, cocobolo slide, and Baltic birch plywood frame, and veneer lining.

Classification: Secret Opening Box

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29 Bollixed Briefcase Puzzle

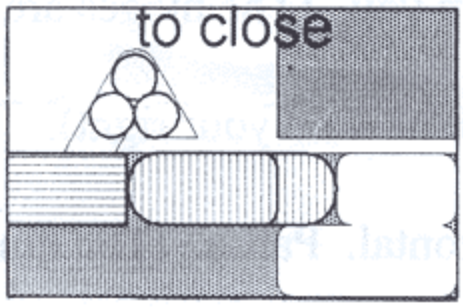
Puzzle Solution:

Initialize: hold with the handle down and top facing away from you, then jiggle and tap the case vigorously. Rotate the case to the left ¼ turn, so that the hinges are on the left. Tap again. Turn left ¼ turn to start.

1. Hold the briefcase so the handle is up and the top is facing away from you (hinges are down).
2. Turn the case slowly to the left just past ¼ turn (the hinges are now on the right).
3. Turn the case slowly to the right, just past horizontal, and pause (hinges are now on the bottom).
4. Continue to turn the case to the right another ¼ turn, past the vertical (hinges are now on the left).
5. Turn the case slowly ¼ turn to the left (the hinges are back on the bottom).
6. Continue to turn the case to the left another ¼ turn (the hinges are now on the right).
7. Turn the case slowly back to the right ¼ turn, and pause; a tap may be necessary (the hinges are on the bottom).
8. Lay the case down flat, top side up, and open the case in the normal manner by unlocking the two small latches.

To close

1. Arrange the pieces as shown



2. Close and latch the case.
3. Tip the case so that the hinges are up, and perform the initialization steps above.

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8 CYLINDER FULL HOUSE

Puzzle Goal:

Find a path that visits each light square exactly once. Your path cannot cross itself or enter a black square or the top or bottom of the cylinder; AND once a direction is chosen you cannot turn unless forced to by earlier rules.

Start by choosing a white square. Loop the string over the nail in your starting square and choose a direction. Now you are on your own! Good luck!

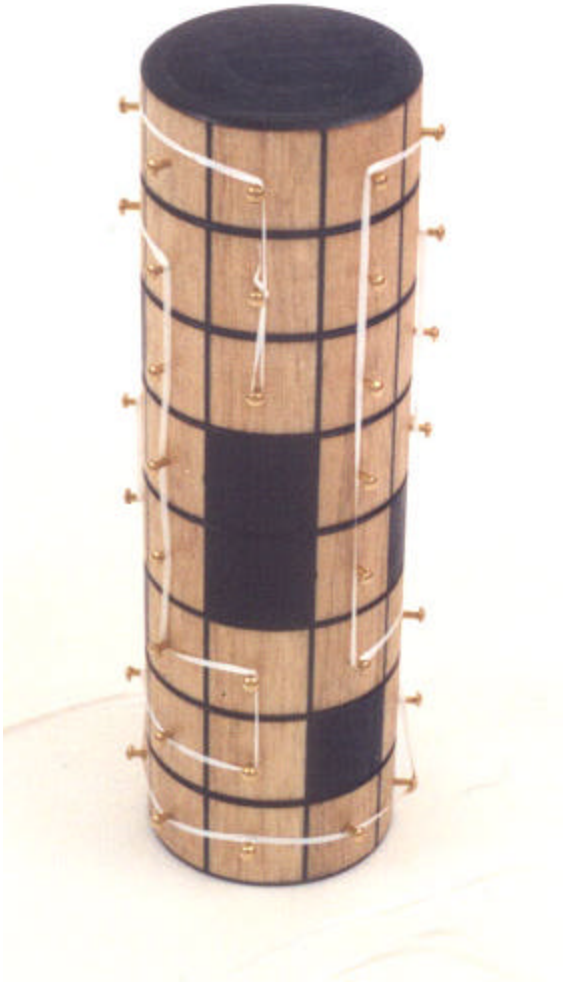
Materials:

wood, brass, and string

Classification: sequential move puzzle

History:

The special rule, about turns, is due to Erich Friedman, who coined the term “Full House” Puzzles. Erich used square or hexagon grids in the plane for his “Full House” Puzzles. This puzzle wraps an 8 x 8 square onto a cylinder. Therefore, the name 8-CYLINDER FULL HOUSE.



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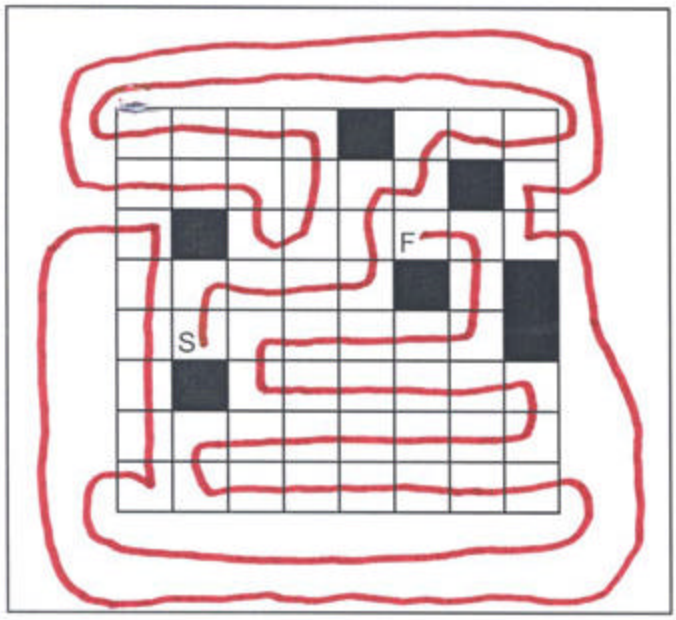
30 8 CYLINDER FULL HOUSE

Puzzle Solution:



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31

QUADS AND RODS

Puzzle Goal:

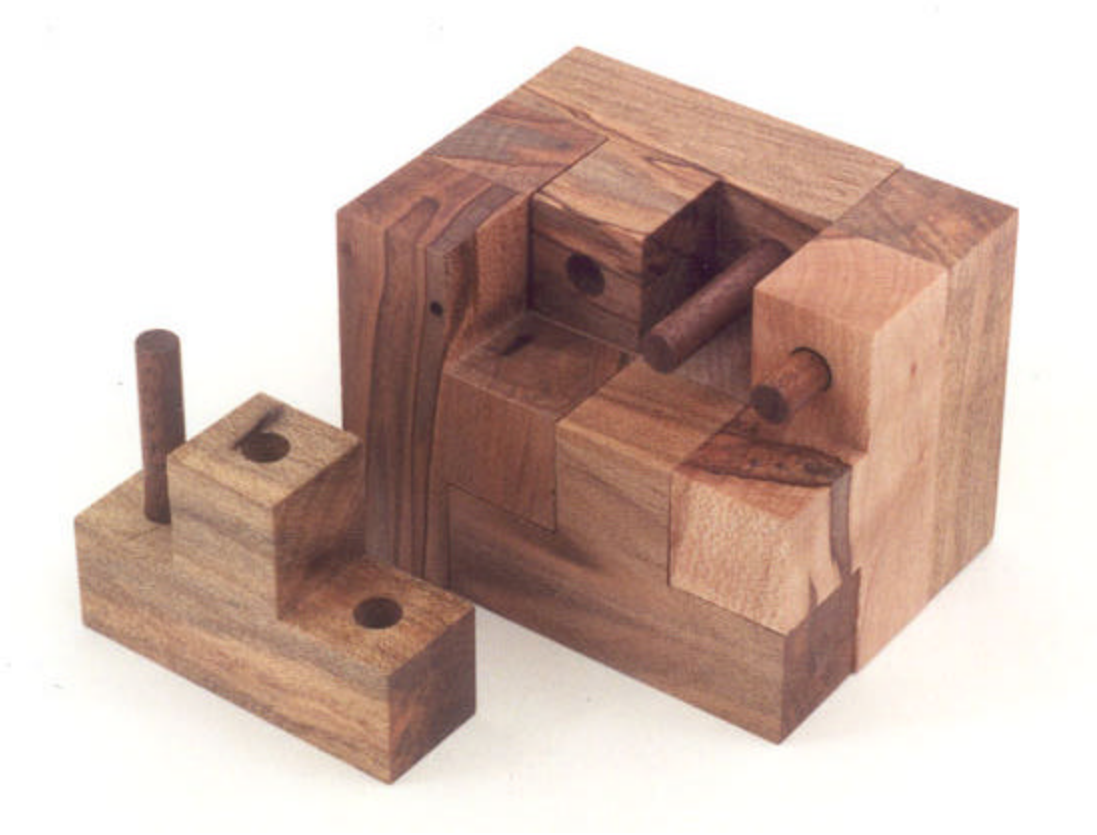
Build a 3 x 3 x 4 brick

Materials:

Classification: 3D Assembly

Notes:

Each piece has one or more rods fastened to it, as well as several holes. When assembled, each unit cube of the 3 x 3 x 4 brick will have exactly one rod through it. The rods are slightly shorter than 3 units so that no holes or rods are visible on the assembled brick.



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31 QUADS AND RODS

Puzzle Solution:

N/A

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32 Hide the Animal!

Puzzle Goal:

1: Chose a problem sheet illustrated with animals and set it in the tray.

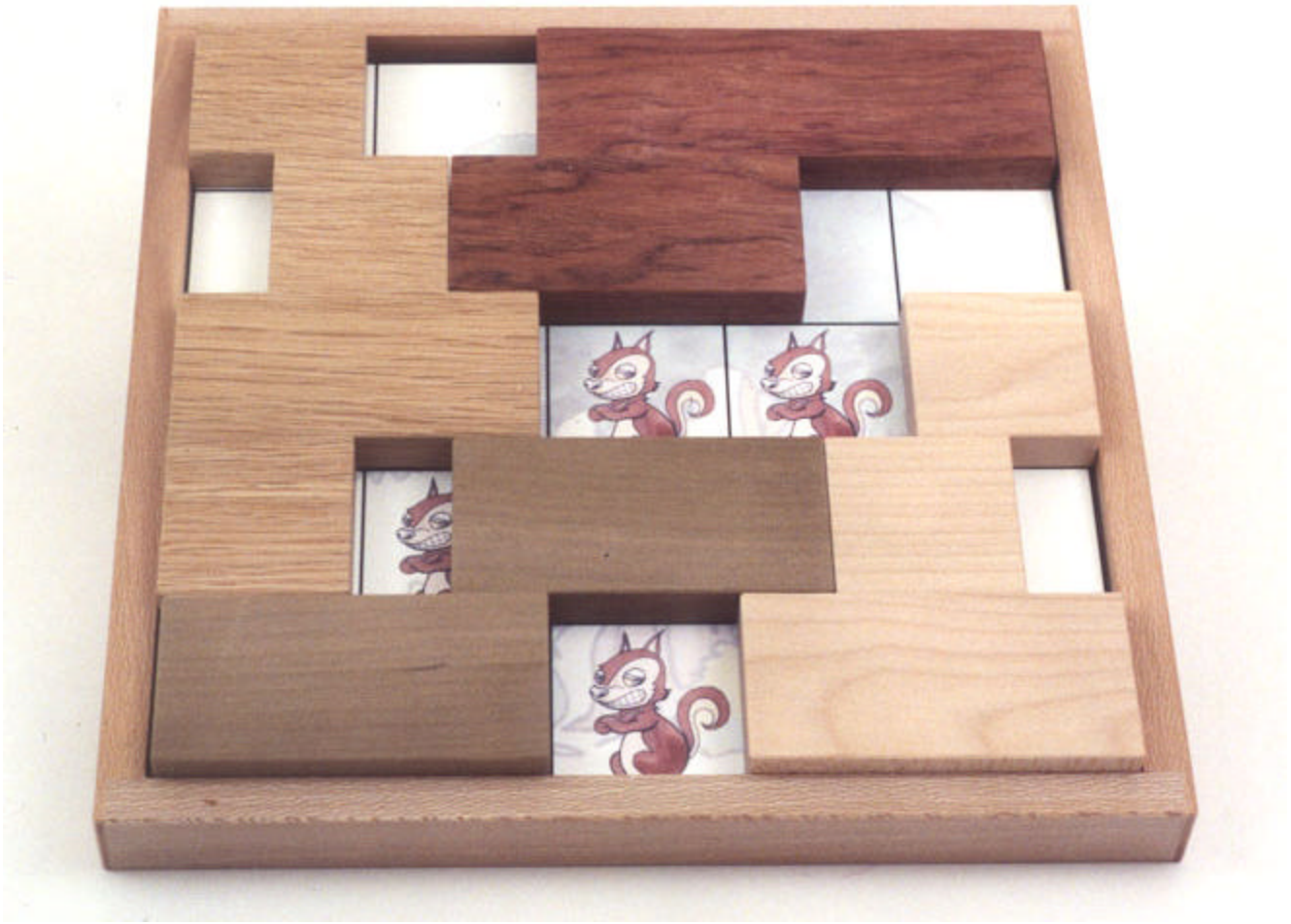
2: Pack the four pieces in the tray to hide all illustrated animals.

Problem no.1, 2 (Squirrel)	**Easy**
Problem no.3-5 (Sheep)	**Normal**
Problem no.6-8 (Horse)	**Hard**
Problem no.9, 10 (Tiger)	**Special or Tricky**

Materials:

Case: sycamore and plywood; Pieces: magnolia, maple, bubinga and oak

Classification: Put-together (2D)



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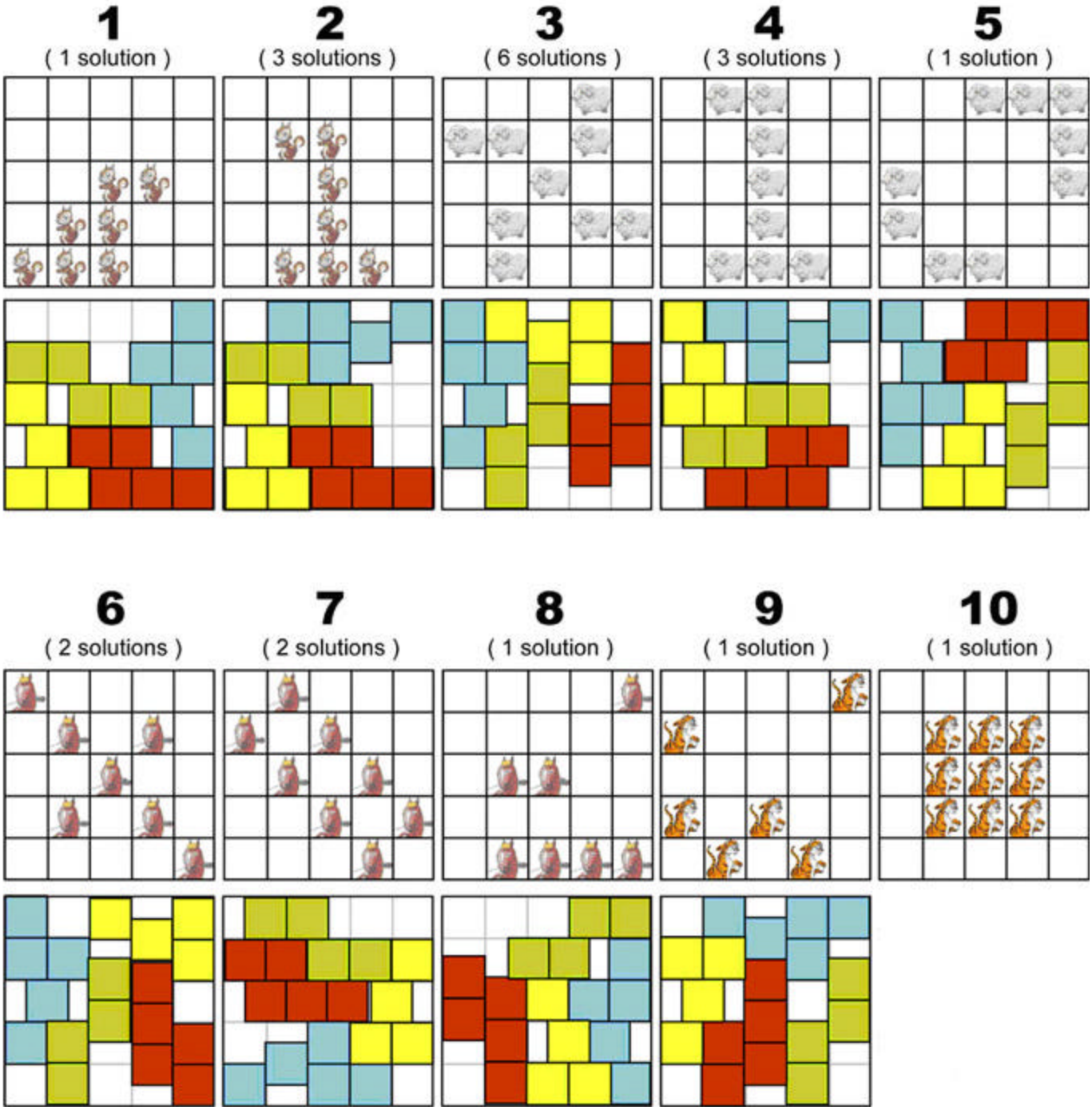
32 Hide the Animal!

Puzzle Solution:



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33

DoDo

Puzzle Goal:

Disassemble and reassemble the interlocking puzzle

Materials:

Imbuya (South American Walnut), glue, lacquer

Classification: Interlocking with sequential movement

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33 DoDo

Puzzle Solution:

Locate and start with pieces “A”,“M”,”B”, and “I”. They assemble easiest by putting them together as “A” and “M” and then “B” and “I” as each of two sets of two. This is shown in the photos below. Once together in the correct way, you should be able to read AMBI in a counter-clockwise direction. All letters have the correct orientation to the center point. This first step is difficult to orient due to the odd shapes of the pieces. Study the photos carefully and verify they are correct before proceeding.

To reassemble from here, use the disassembly sheet in reverse order, moving the pieces in the opposite directions at each step.

- Push piece “I” back up into place. Remove piece “D” directly by sliding it out from under piece “M” toward piece “A”.
- Push piece “X” back up. Push piece “I” back down. This releases pieces “E” and “X”. Push piece ”E” over the top of piece “I” and remove “E” and “X” together.
- Push piece “X” down all the way. This releases piece “T” to be removed by sliding it completely out over the top of piece “X”. A hole is created by the removal of “T” and pieces “D”, “M”, and “B”.
- Push piece “E” back into its original position, then push piece “I” back to its original position.
- Completing step 2 opens the lock on pieces “O” and “R”. Push piece “R” to the lower right and piece ”O” will come out with it. Remove both pieces at this time.
- Holding the puzzle with the hole created from the removal of piece “S” pointing to your right, push down on piece “I” until it stops. Still holding the puzzle in this way, slide piece “E” inward, toward your body, until it stops.
- Find and remove two key pieces (labeled “U” and “S”). They will slide out when pushed in the right direction. They are located next to each other.

The pieces are assembled in the order of the word **AMBIDEXTROUS**. This is nearly the only word in the English language that I could find that had 12 letters, all of them different. This corresponds to the 12 different pieces of the Dodo Puzzle (and an attribute that could be helpful in assembling the puzzle!).

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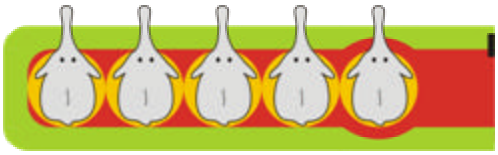
34 Crazy Elephant Dance

Puzzle Goal:

Move the slide with the attached elephants out of the tray.

Start:

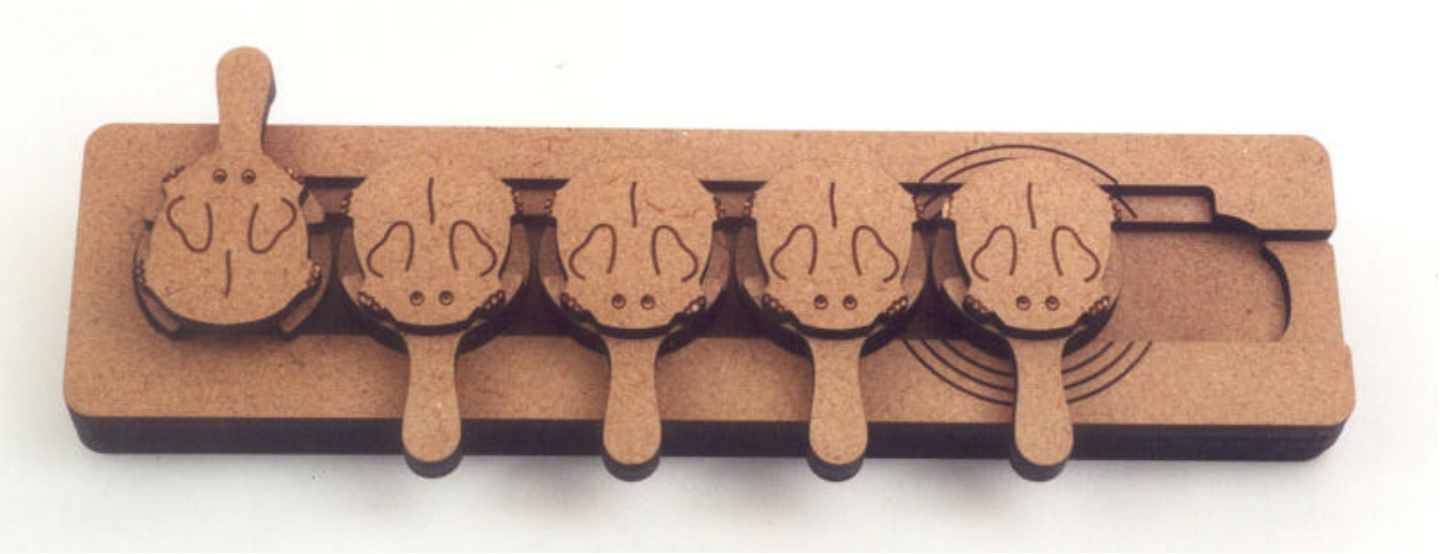


End:

Materials:

Wood (MDF)

Classification: Sequential Movement



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34 Crazy Elephant Dance

Puzzle Solution:

Solution is recursive. To flip n elephants:

- flip n-1 elephants
- turn the last elephant 90 degrees
- flip only elephant n-1
- turn the last elephant 90 degrees
- flip only elephant n-1

Total moves: $3 \cdot 2^n - 2n - 3$

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35 Edge-Corner-Cube II

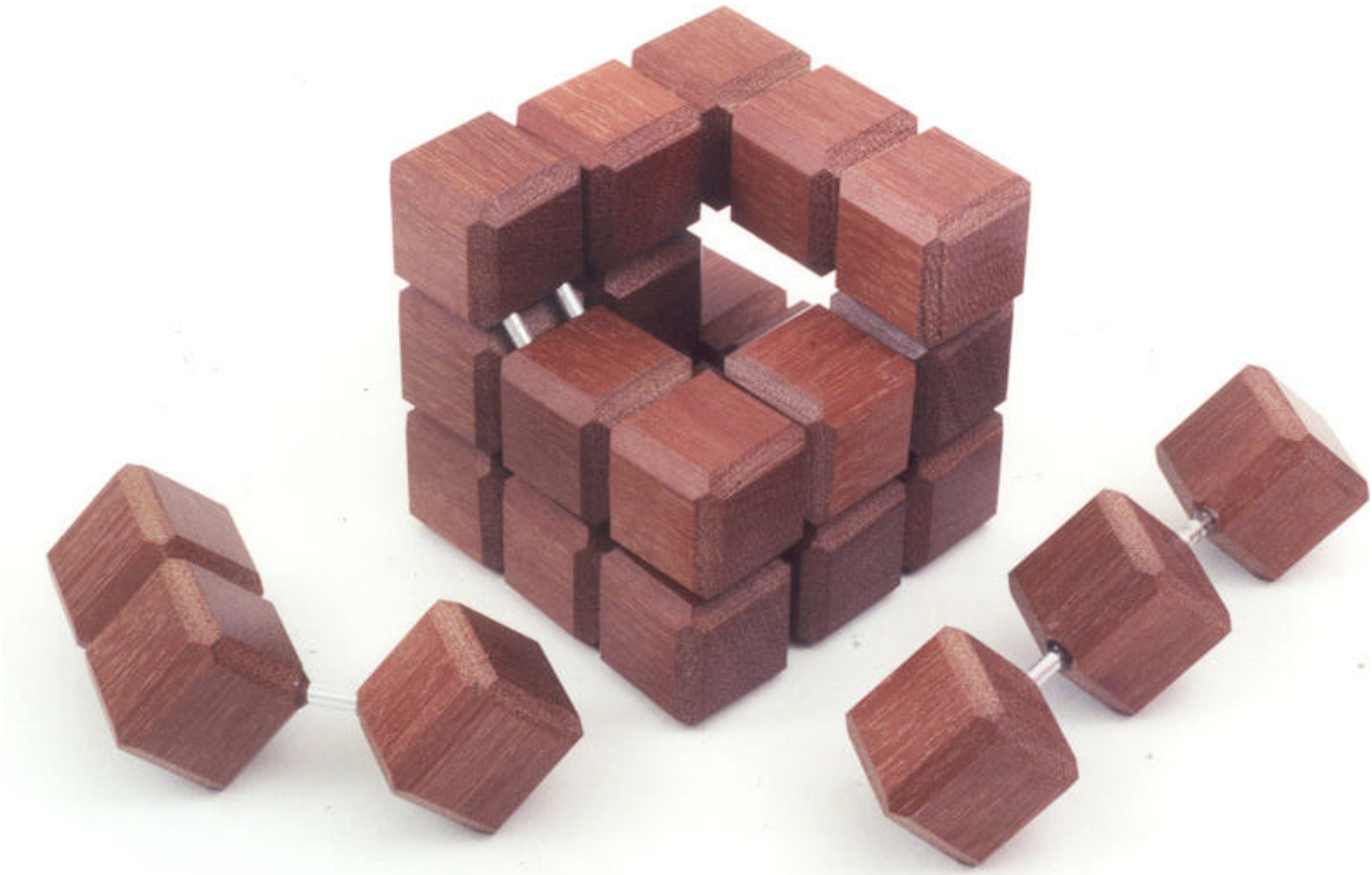
Puzzle Goal:

Assemble the 7 pieces to a 3x3x3 cube

Materials:

wood (Massaranduba), metal

Classification: Interlocking



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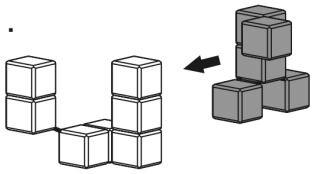
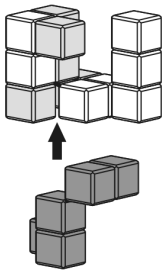
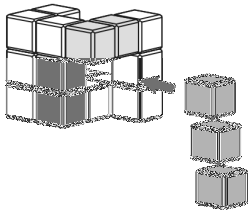
35

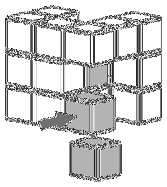
Edge-Corner-Cube II

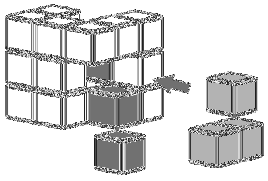
Puzzle Solution:

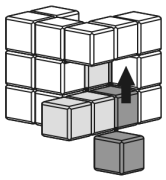
1. 

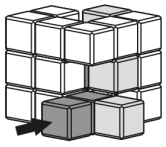
2. 

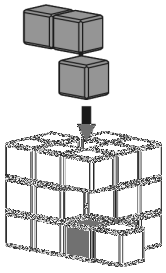
3. 

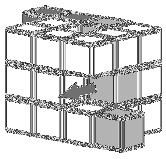
4. 

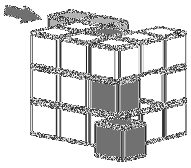
5. 

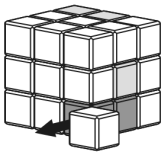
6. 

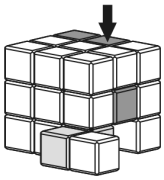
7. 

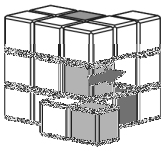
8. 

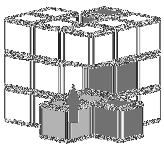
9. 

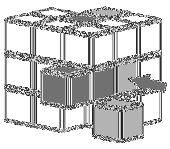
10. 

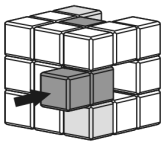
11. 

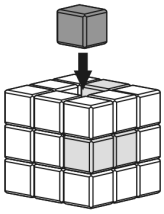
12. 

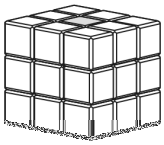
13. 

14. 

15. 

16. 

17. 

18. 

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36

7 Piece Nightmare

Puzzle Goal:

Put the pieces inside the tray. Don't try to make it out first--you will spoil the fun!!

Materials:

Black walnut, hard maple

Classification: Sequential Packing

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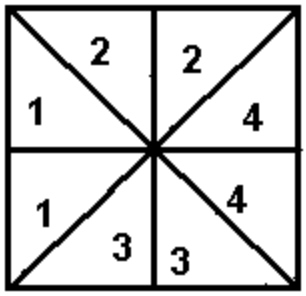
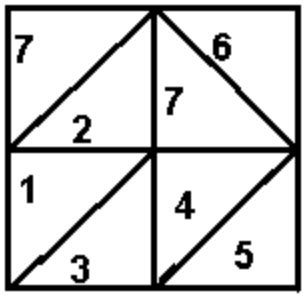
36 7 Piece Nightmare

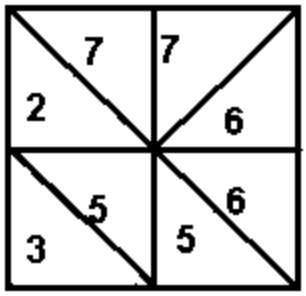
Puzzle Solution:



top layer



middle layer



bottom layer

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37

Crossknot

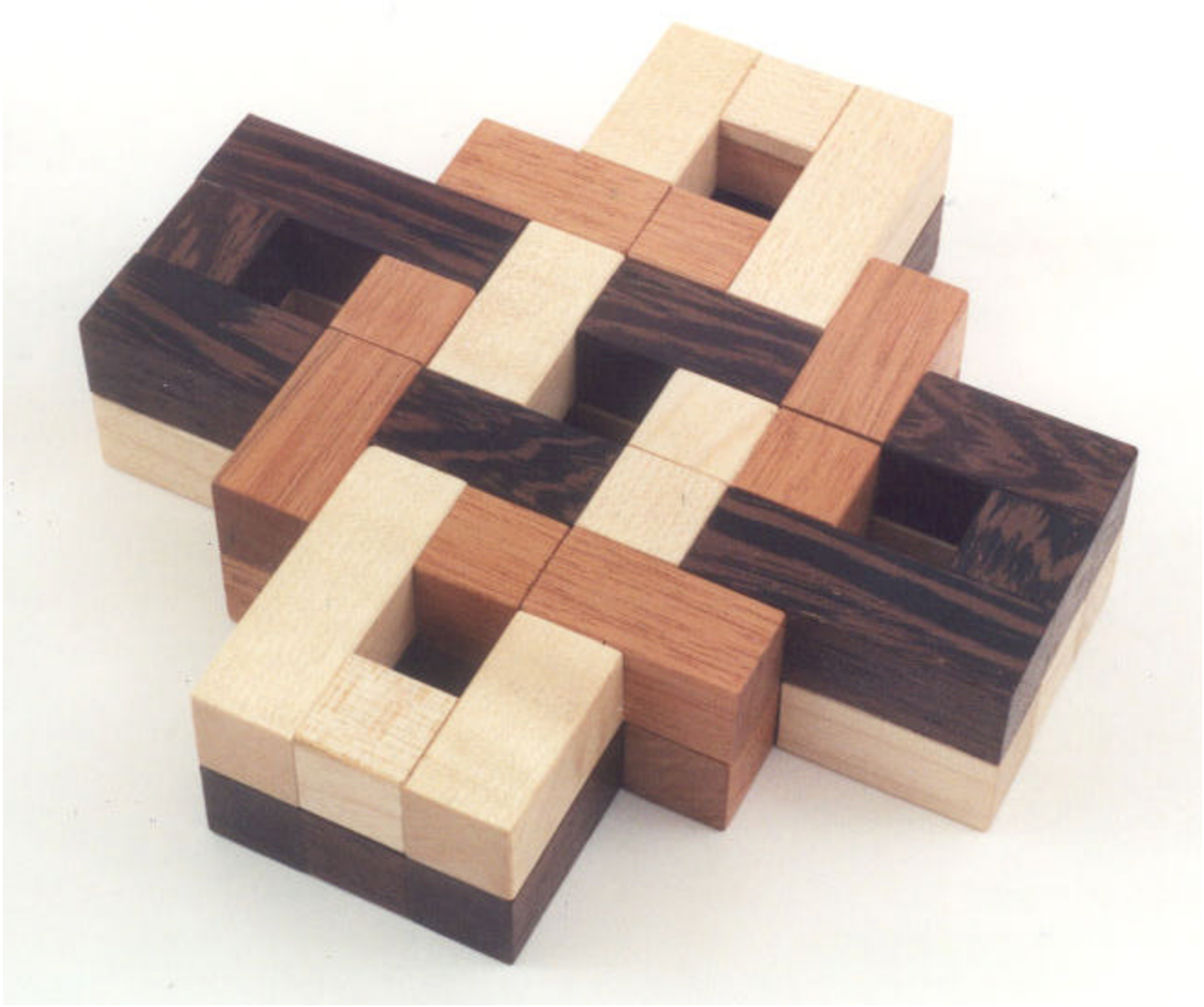
Puzzle Goal:

Place the pieces in such a way to interlock and form a cross.

Materials:

Wenge, hard maple, mahogany sappeli

Classification: 2D Interlock



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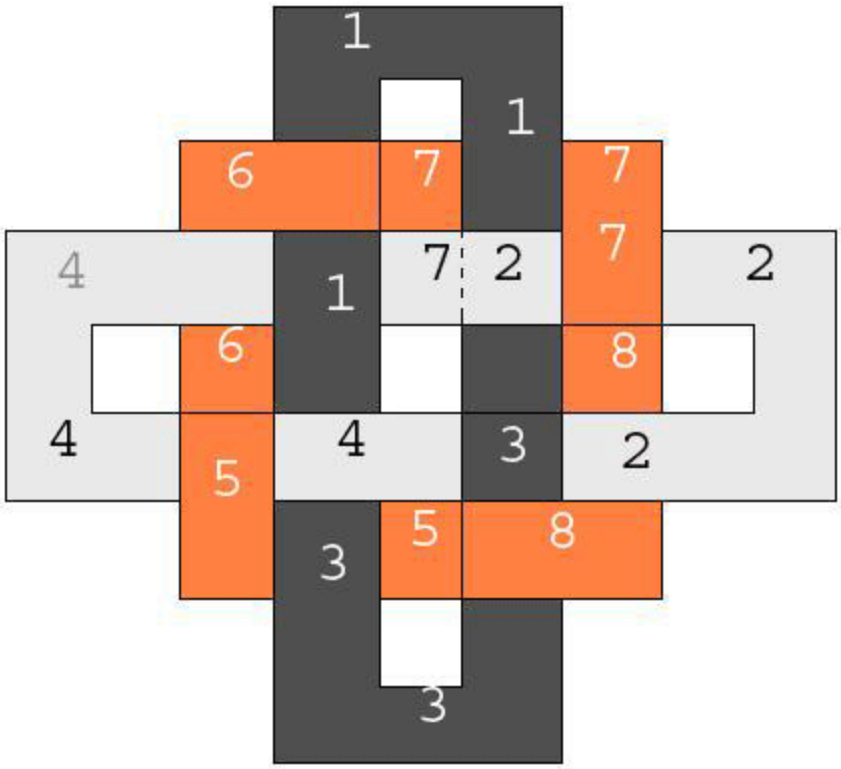
37 Crossknot

Puzzle Solution:



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38

Olympic Cube No6a

Puzzle Goal:

Move the individual layers of the 6x6x6 cube, so every side of the puzzle has the same color.

Materials:

ABS Plastic

Classification: Sequential Movement

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38 Olympic Cube No6a

Puzzle Solution:

The solution of the puzzle is globally well-known because of the famous Rubik's Cube.

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39 Sleazier

Puzzle Goal:

Place all four pieces flat in the tray.

Materials:

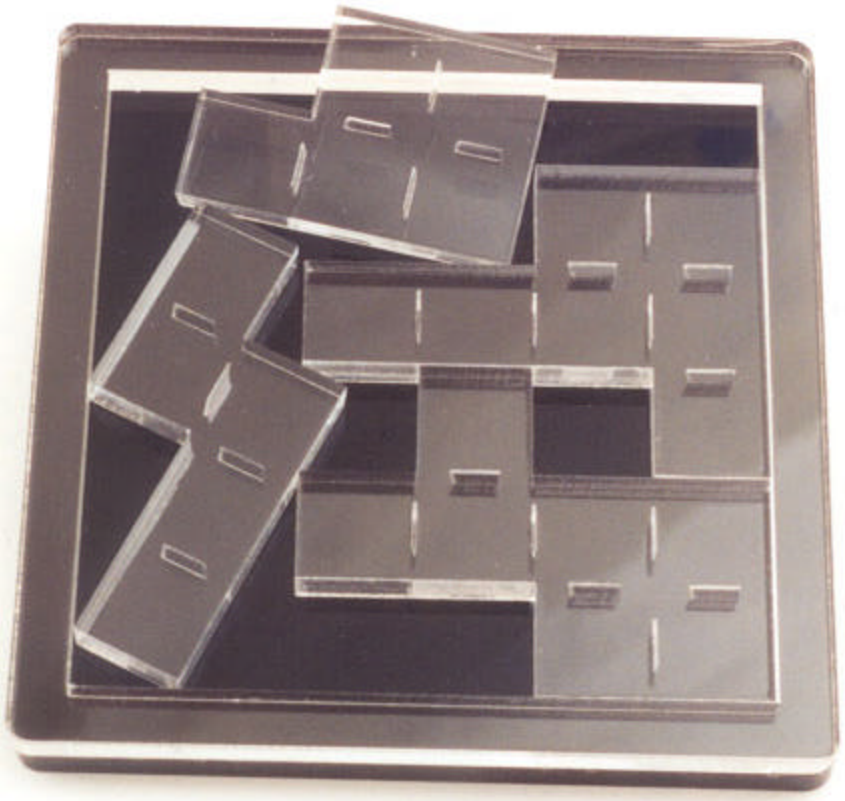
Plastic

Classification: 2-D Put Together

Notes:

History:

The inspiration for the puzzle came while failing to solve “Four Sleazy Pieces,” by Stewart Coffin. This puzzle is even less “perfect” than that one, however; hence the name.



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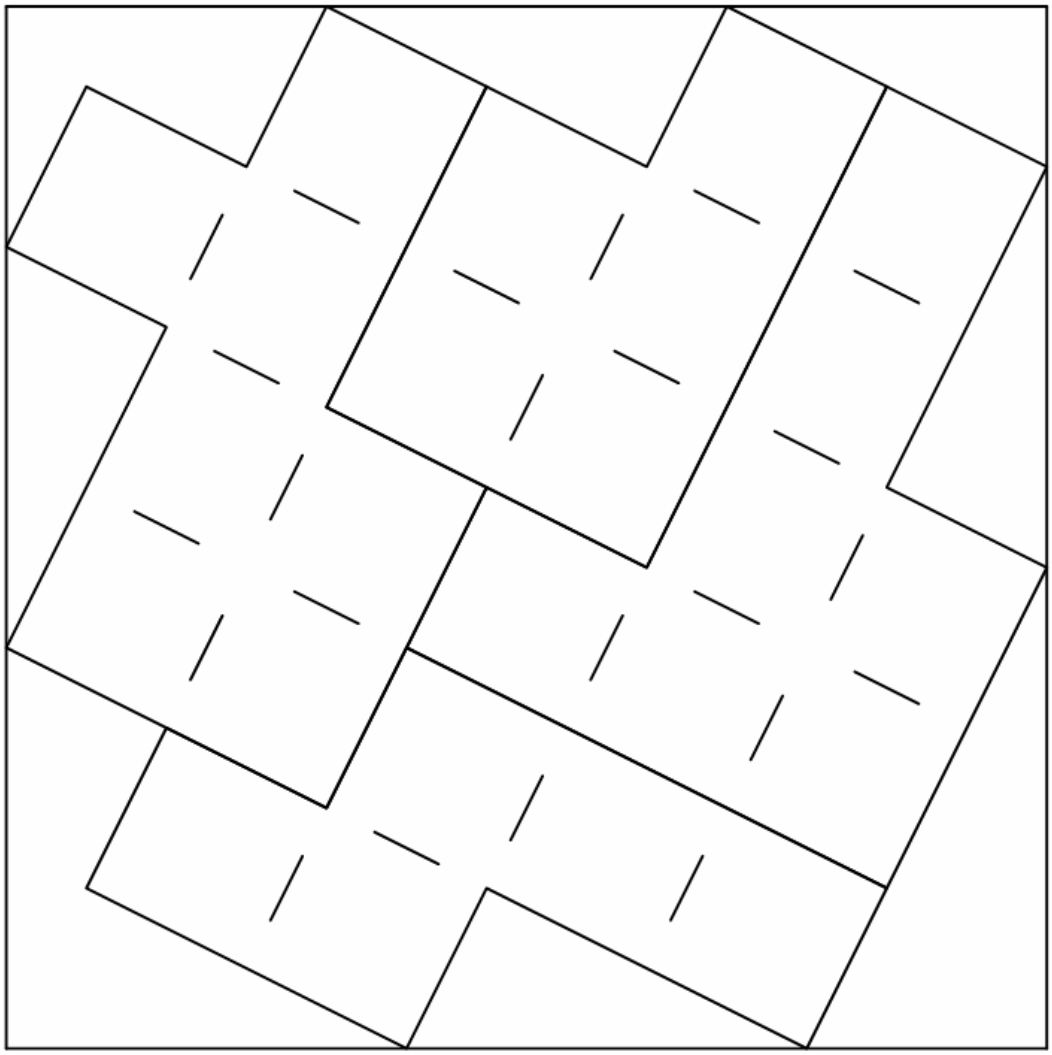
39 Sleazier

Puzzle Solution:



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40

Homage to the Cube

Puzzle Goal:

The goal of the puzzle is to make a pattern of the tiles in which no tile is adjacent, along an edge, to a tile of the same color. Tiles may share the same color with a tile in a diagonal direction across an intersection of tiles.

Materials:

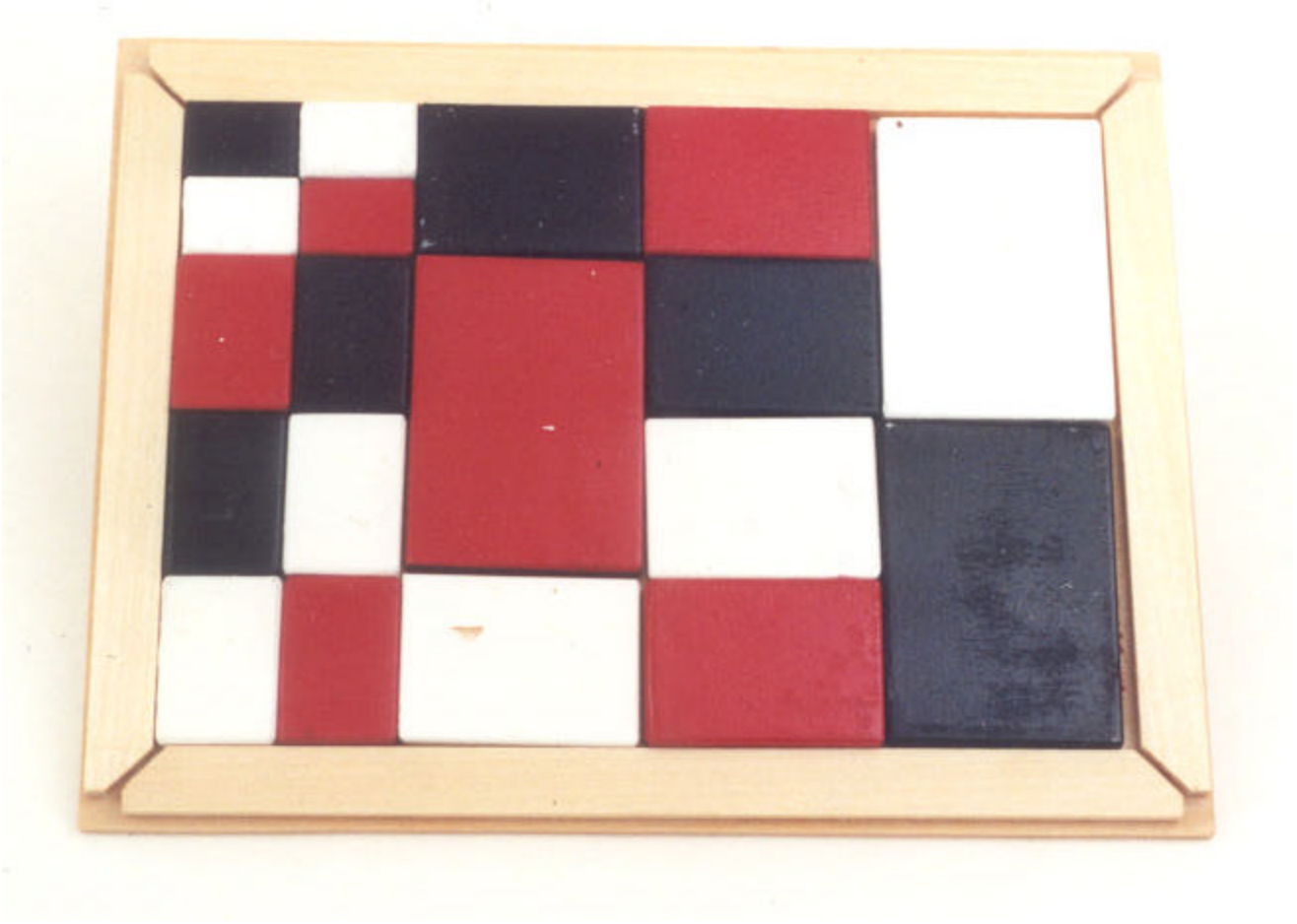
basswood with a finish of enamel

Classification: Two-dimensional assembly

Notes:

The unusual feature of the tiles is that each increase in size is by a factor of two, so that each tile is half the area of the next larger tile. Nonetheless, the ratio of the length of the sides of all the tiles is the same: $\sqrt{2}$:1. This forces the tiles of each size to maintain either a horizontal or a vertical orientation in the pattern; a tile that is placed vertically will not fit horizontally, and vice versa.

History:



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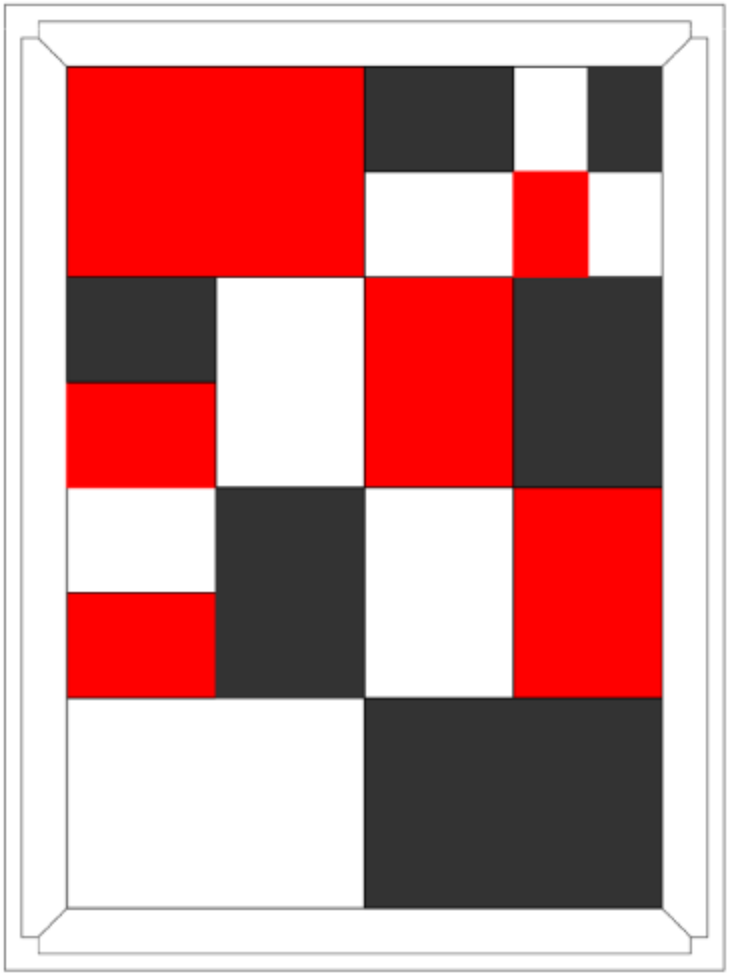
40 Homage to the Cube

Puzzle Solution:



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41

The Box of ZN

Puzzle Goal:

Manipulate the moveable pieces on the top of the puzzle box to open it. Once the lid is opened, there is a tricky "panel" that must also be removed.

Materials:

Keruing and Bubinga

Classification: Trick opening box

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41 The Box of ZN

Puzzle Solution:

N/A

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42 Solitary Confinement

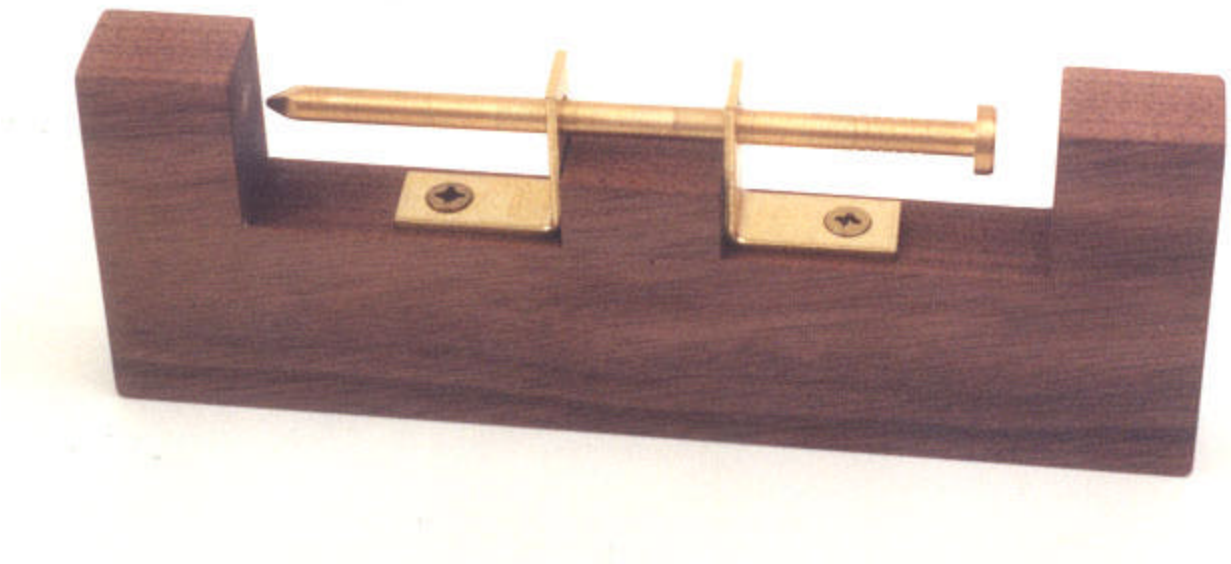
Puzzle Goal:

Free the nail from its constraints.

Materials:

Brass nail and walnut base

Classification: Take Apart



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42 Solitary Confinement

Puzzle Solution:

N/A

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43 The Skeleton Key

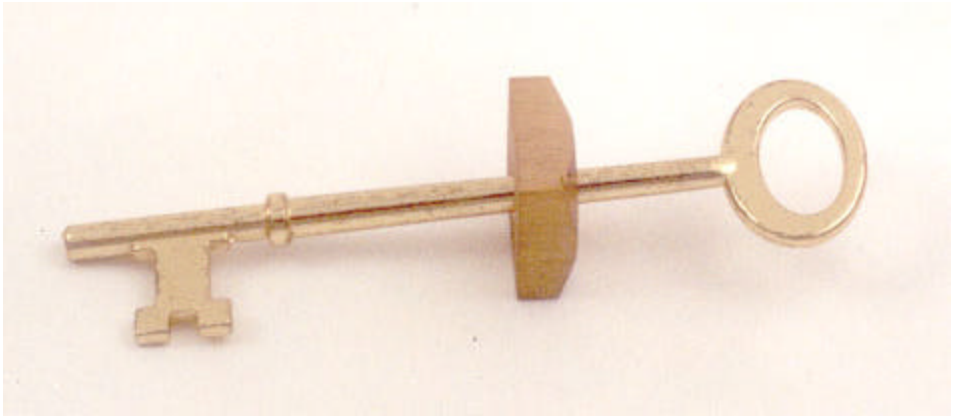
Puzzle Goal:

Remove the nut from the key

Materials:

Brass nut and key (the key is brass plated)

Classification: Take Apart



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43 The Skeleton Key

Puzzle Solution:

N/A

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44

Stickman No. 5

Puzzle Goal:

Open the box through the sequential movement of its exterior pieces. After this, the next goal is to dismantle the box into its 78 individual pieces and reassemble it back into a working puzzlebox (it is recommended that only one panel be disassembled at a time).

Materials:

Walnut, Maple, Bloodwood & Cherry

Classification: Take Apart

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44 Stickman No. 5

Puzzle Solution:

Manipulate bloodwood tabs so that top and bottom panels are no longer hindered. Through sequential movements, manipulate the sliding side components until the bottom panel is free to move. Move the bottom panel until it stops. Manipulate the sliding side components again until the top of the box opens half way.

With the box now open, additional moves of the side components will allow a retaining bar to be slid out, causing the box to come apart into 78 individual pieces.

It is strongly recommended that the reciprocal pieces from separate panels do not get mixed together, and that you disassemble only one panel at a time.

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45 Stickman No. 7

Puzzle Goal:

Remove all four drawers from their cage.

Materials:

Wenge & Maple

Classification: Take Apart

Notes:

The Stickman No 7 Puzzlebox is unique in that the movement of each drawer depends on the positions of adjoining drawers. The movement of adjoining drawers is also dependant on the positions of the drawers that neighbor them. Once completed, the individual drawers can be also reinserted back in hundreds of different ways (how many?), each producing their own unique series of moves and level of difficulty.

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45

Stickman No. 7

Puzzle Solution:

The puzzle is solved by sliding its drawers in various directions while manipulating the pull tabs that restrict their movement. This process is repeated until drawers are lined up with the maze exit slots found at one end. All four drawers have the same maze patterns in an identical order, so hidden maze patterns can be determined by examining the maze patterns exposed. It is beneficial to focus on freeing only one drawer at a time.

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46

Gyro Brain

Puzzle Goal:

Disassemble and reassemble the cube.

Materials:

360 Machined Brass

Classification: Put-together Puzzle

History:

A prior design, Perplexity, was redesigned and sized to form an alternative "brain" for Berrocal's Hoplita.

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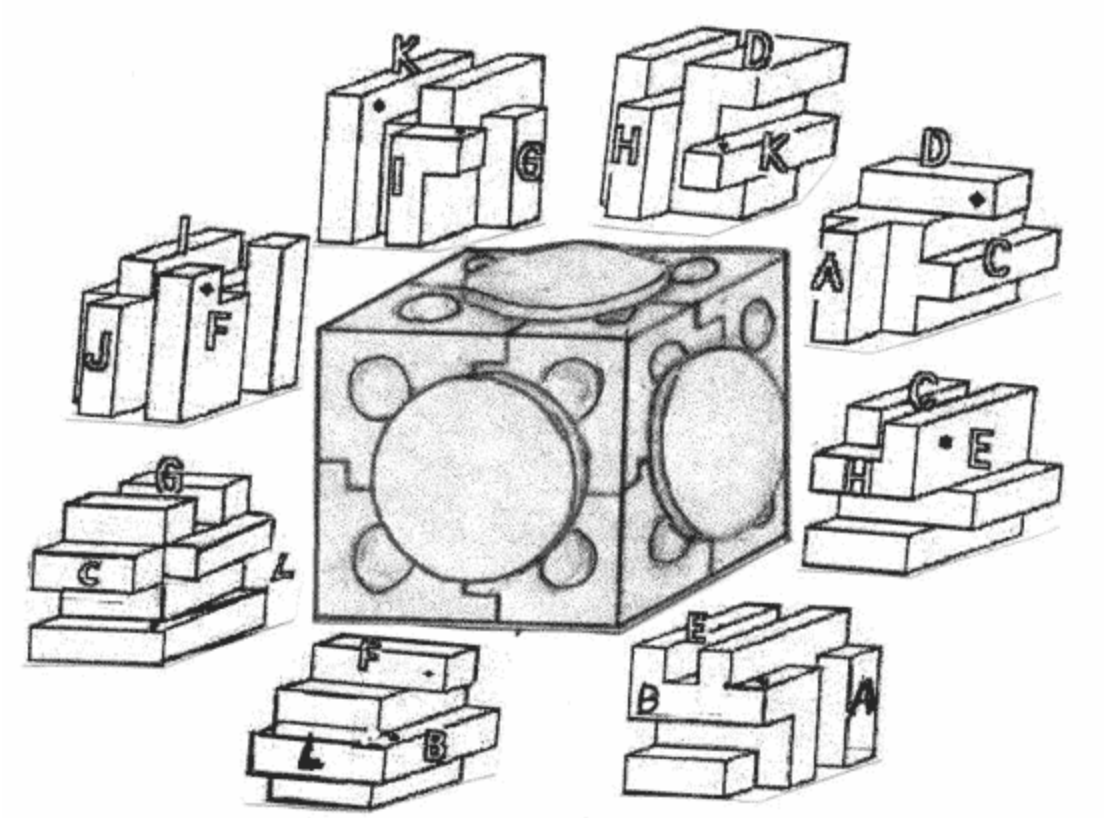
46 Gyro Brain

Puzzle Solution:



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47 Bricks Thru Window

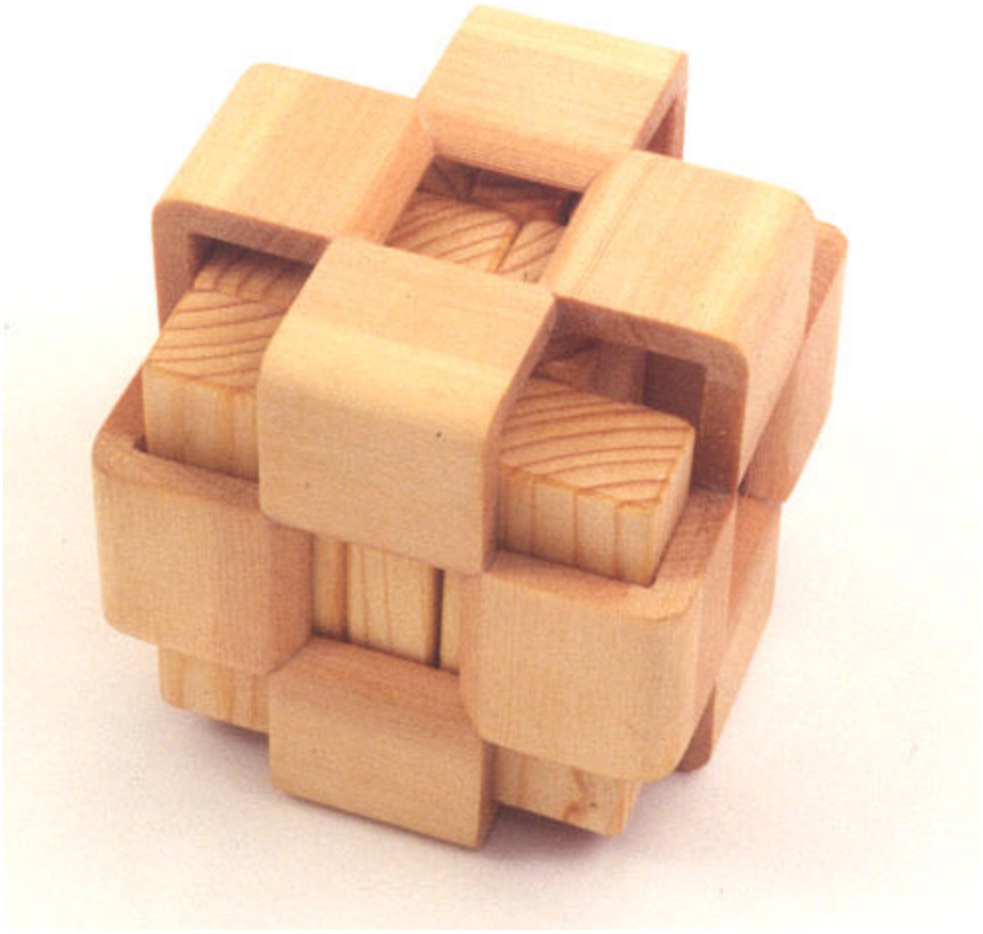
Puzzle Goal:

To take out cuboids from box, and then to replace cuboids within box.

Materials:

Pine

Classification: Box filling/ emptying



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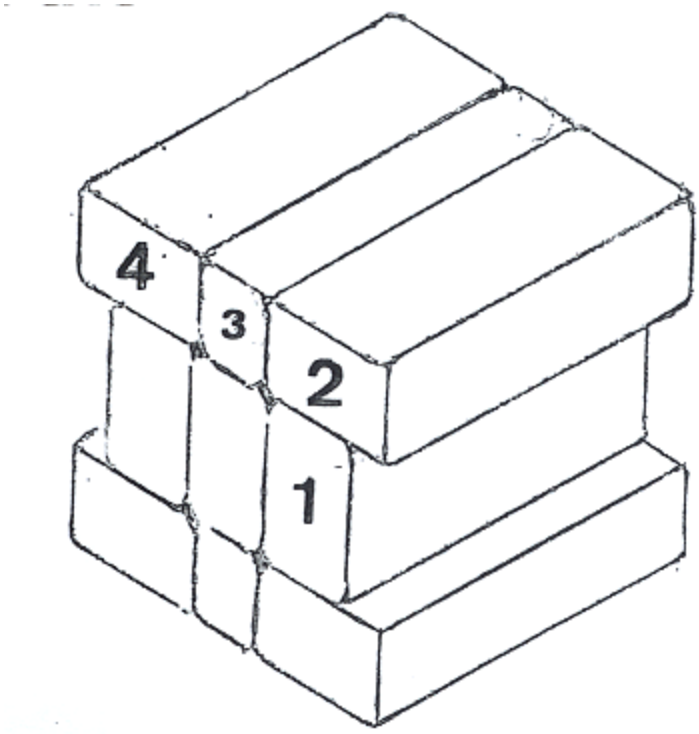
47 Bricks Thru Window

Puzzle Solution:



Note: there are 9 bricks, 7 are the same plus 2 narrow pieces.The puzzle should be placed with the narrow pieces at top and bottom.

In the middle there are 3 thick pieces.

Turn one outside piece 90 degrees (a quarter rotation).A thin cocktail stick can help with all the moves.

The brick above on top layer will drop down.

The top narrow brick can be levered out (again with cocktail stick).

The thick brick that dropped before can be rotated 90 degrees.

The other brick on top layer can now be pushed out of the box at an angle.

It is now easy to empty the box.

Replacing bricks is the reverse of the above moves.

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48

Living Quarters

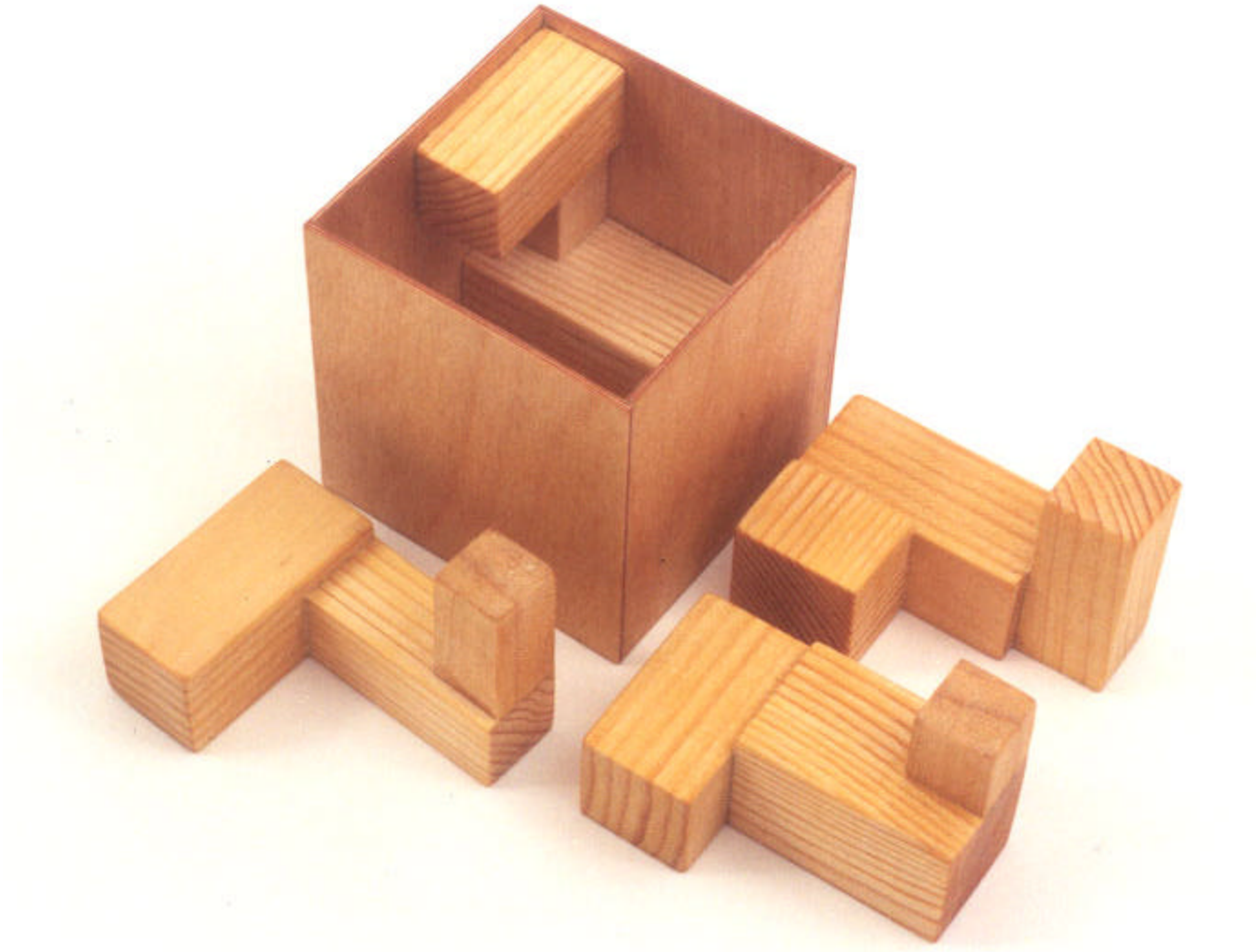
Puzzle Goal:

Fit the three shapes into box and replace lid

Materials:

Pine and marine board

Classification: Box emptying/box filling



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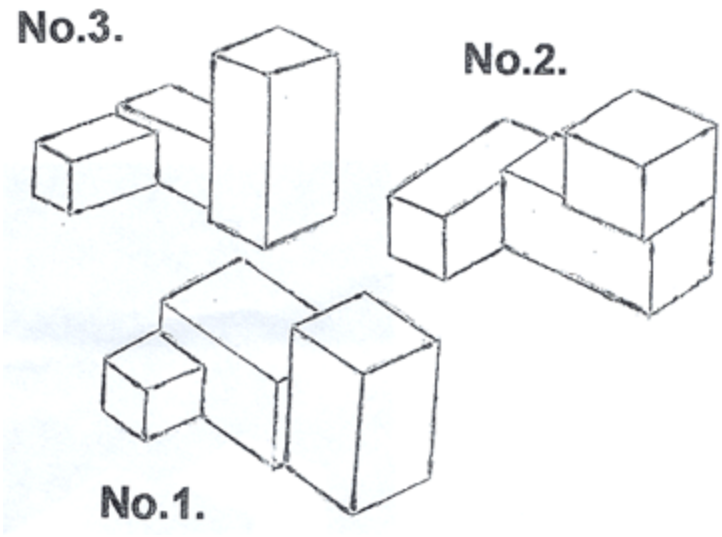
48 Living Quarters

Puzzle Solution:



Note:puzzle consists of 4 quarters.One quarter has been placed and glued inside to help the solver!

Note the three pieces:

1) 1. thin,very thick,thick wood.

2) 2. medium,thick,very thick wood.

3) 3. thin,medium,thick wood.

Have the box facing you with glued piece at top left.

Place no.1 in box on left,thin block at top. (All pieces are placed at edge of box).

Pull no.1 out (2cm) till it hooks under glued piece.

No.2 is placed at lower right,very thick block at the top.Bottom block will hook under piece no.1.

Keep both no.1 and no.2 pulled out and hooked together(about 2 cm).

Piece 3 goes in at an angle, thin wood first into middle of box,hooking under no.1 and no.2.

Push the three pieces into box together.

To empty the pieces,reverse the above moves.Your little finger hooked into box or “emptying ketchup bottle technique” will be needed for first move.

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49

Triple Trouble

Puzzle Goal:

Insert the blocks into the box.

No significant force is necessary.

Materials:

Wood (cherry/bubinga or maple/bubinga)

Classification: 3D Assembly

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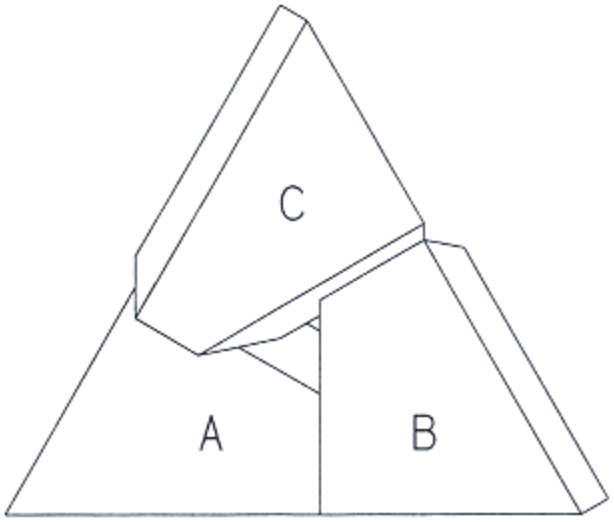
49 Triple Trouble

Puzzle Solution:

The blocks cannot be inserted into the box as a unit, nor can they be inserted one-at-a-time. Block C (see figure) must be inserted half-way first. The other blocks remain together as they slide against C, and cover the distance to the base of the box at twice the speed. I recommend the following procedure.



1. Identify the top face of each block. While the other faces are all asymmetrical, the top face of each is a symmetrical kite-shape with two opposed right angles, a 120° angle, and 60° angle.

2. Place all the blocks upside-down and arrange them in a circle, with the the 60° angles pointing outward.

3. Note that no two blocks are alike, so there are 2 possible arrangements: blocks A, B, and C might go around clockwise or counterclockwise. Only one is correct, so try fitting them together; if the contacting faces are not flush against each other, then swap any two blocks to correct the arrangement.

4. Now identify block C. Its bottom face (which is now facing up) is the most oblong of the three, and includes both the longest and shortest edge of all the bottom faces. (It is also the only block whose contact surfaces with the other blocks are both non-vertical.)

5. Turn the blocks right-side-up and hold them in the air. Hold A and B together with one hand, with C in the other. Now travel block C down along the sides of the other two blocks until its bottom protrudes beneath them by half its height. Seen from below, the arrangement will look like the figure.

6. Insert the bottom half of block C into the box, taking care not to let it drop in.

7. The next difficulty is to guide blocks A and B in. All the blocks should now slide in with little difficulty. If they jam, then one got a little ahead of the others. Gentle jiggling and/or lifting of a block are sufficient to correct this. Never apply downward force to a block, as this will cause it to jam.

Block Removal Hint

Removing the blocks is a matter of artful jiggling. Turn the box upside-down, just over a suitable surface for the blocks to fall onto, and jiggle. With the other hand, apply gentle pressure to the blocks from below. Without giving away too much information about the solution, I can only advise you to try placing a little extra pressure on particular blocks in a trial-and-error fashion. (It's easier than it sounds.)

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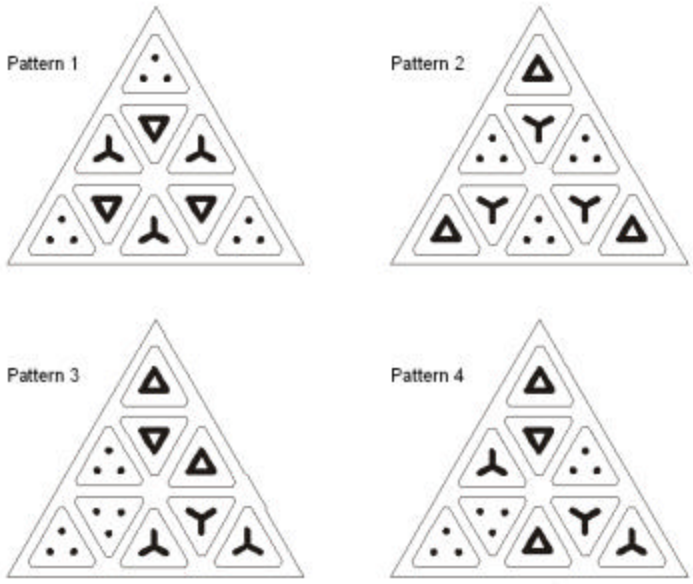
50 Necklace Packing Puzzle

Puzzle Goal:

Pack the nine triangle beads of this necklace in the tray to make the following patterns. The two chain parts can be loose and they have to be packed completely around the beads.



Materials:

aluminum "hylite" and acryllic beads, nylon string and nickel chain, packed with blue paper description in transparent jewel case

Classification: Put Together (Packing Problem)

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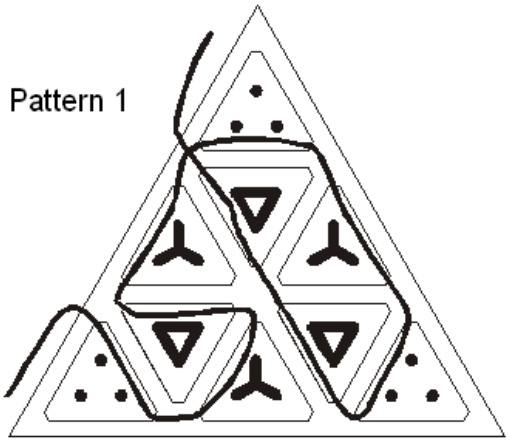
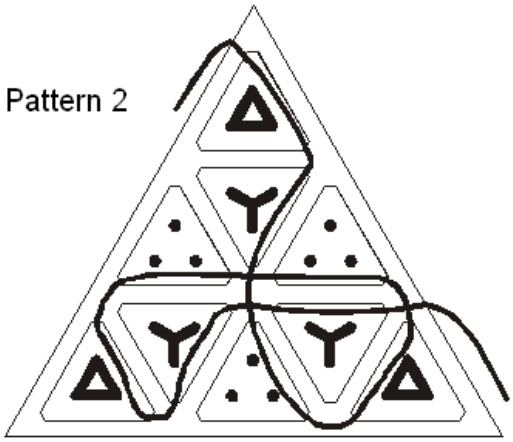
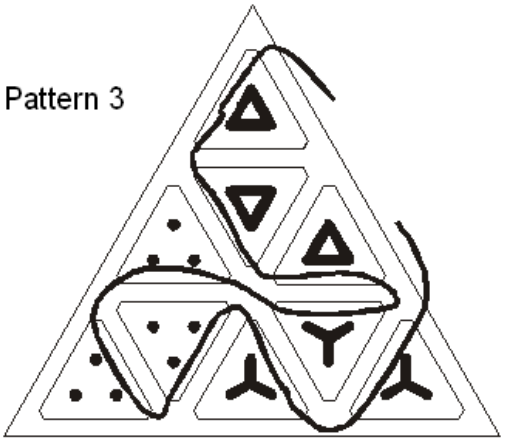
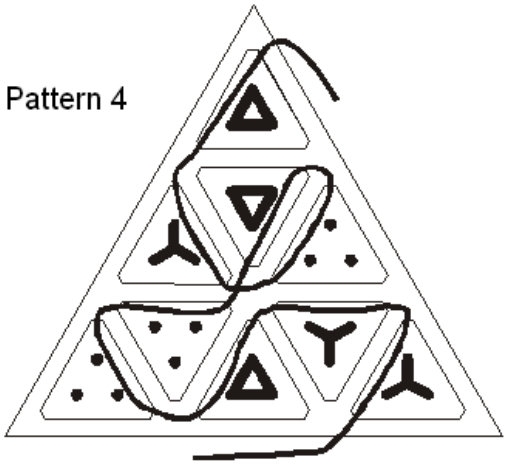
50 Necklace Packing Puzzle

Puzzle Solution:









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51 Butterfly

Puzzle Goal:

From the starting position shown, without lifting the pieces from the tray, rearrange them to put the Swallowtail together. The shortest path requires 31 moves. Then, from that solution, continue rearranging the pieces until the Monarch emerges again. The shortest path this time is only 9 moves.

Materials:

paper, laminate, aspen, ebony, birch plywood

Classification: Sliding Block

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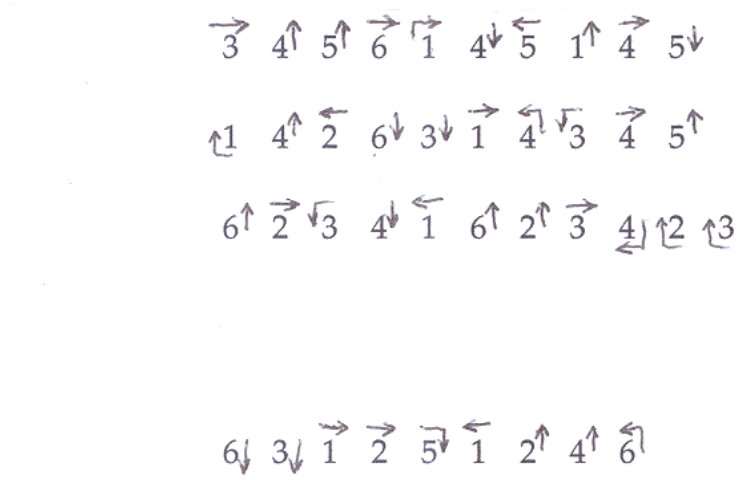
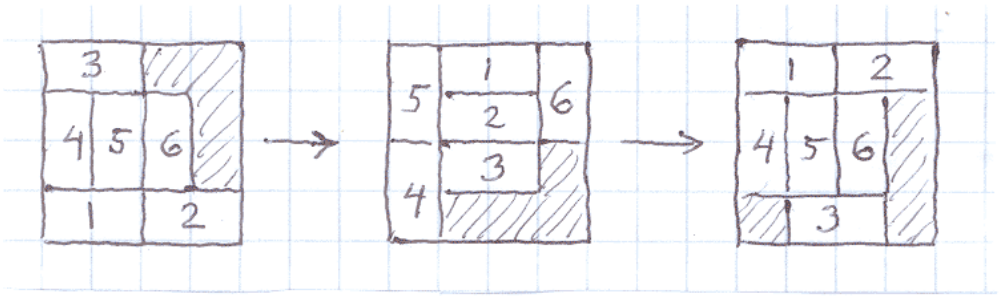
51 Butterfly

Puzzle Solution:





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52

W-O

Puzzle Goal:

Find four compartments

Materials:

Walnut, Rengas and Iron bolt

Classification: Take-Apart

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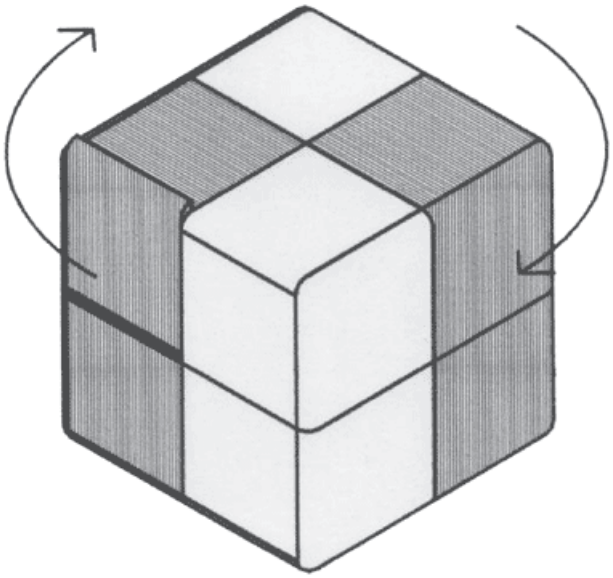
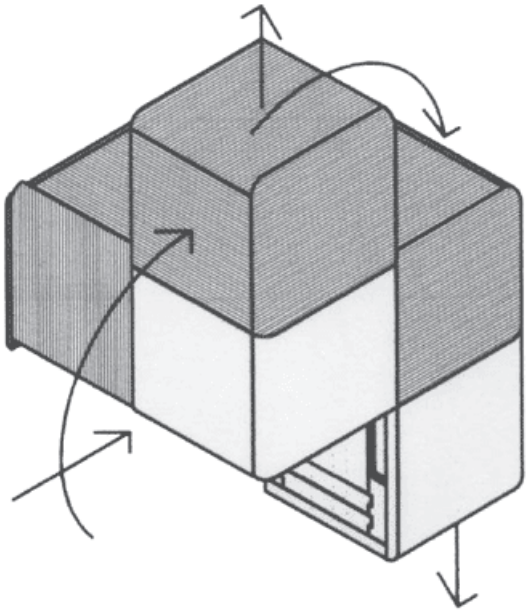
52

W-O

Puzzle Solution:

1. Slide a walnut plate
2. Twist the box like a Rubik's Cube (first diagram)
3. Slide and twist the box (second diagram)
4. You can now open all the lids





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53

Petit Heart

Puzzle Goal:

Open both halves of the heart

Materials:

lengas, mizuki

Classification: Take-Apart

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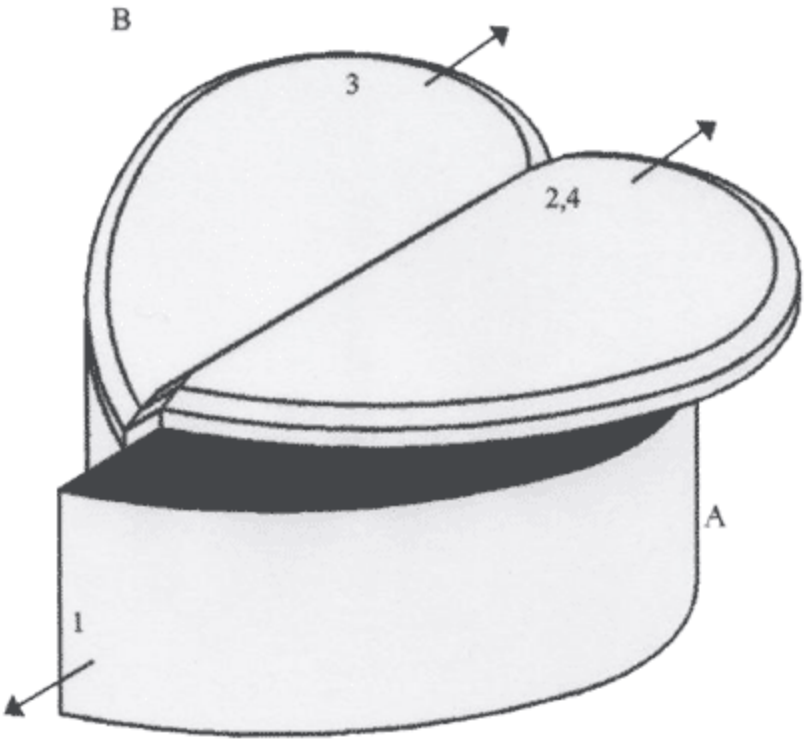
53 Petit Heart

Puzzle Solution:

1. Move box A about 1 cm to this side.
2. You can slide the box A's top plate, but don't remove the top plate yet; slide it only about 2 cm.
3. Slide box B's top plate and remove it.
4. Slide box A's top plate an remove it.



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54

Caged Knot

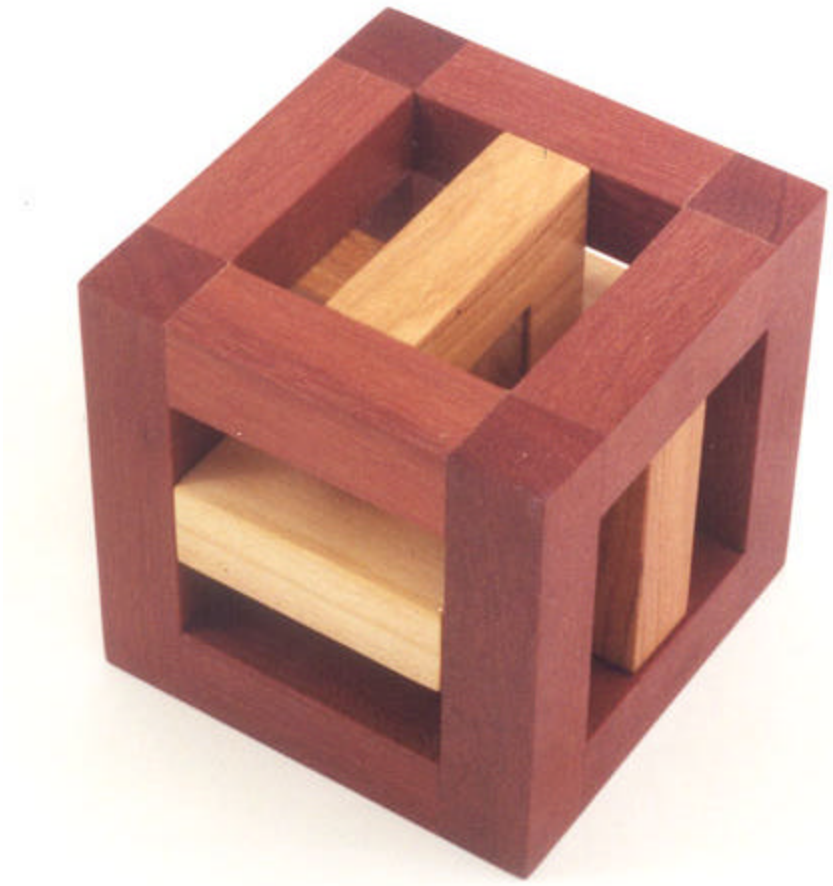
Puzzle Goal:

Take it apart (difficult) then put together (very difficult)

Materials:

Masaranduba wood (cage) and maple for the pieces

Classification: 3.2 Interlocking Geometric Object



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54 Caged Knot

Puzzle Solution:

```
XXXXX | X...X | XBBBX | X...X | XXXXX
X.C.X | ..C.. | ...B. | ..C.. | X.C.X
X.C.X | DDDDD | DB.BD | DD..D | X.C.X
X.C.X | ..C.. | .BCB. | ..C.. | X.C.X
XXXXX | X...X | XBBBX | X...X | XXXXX
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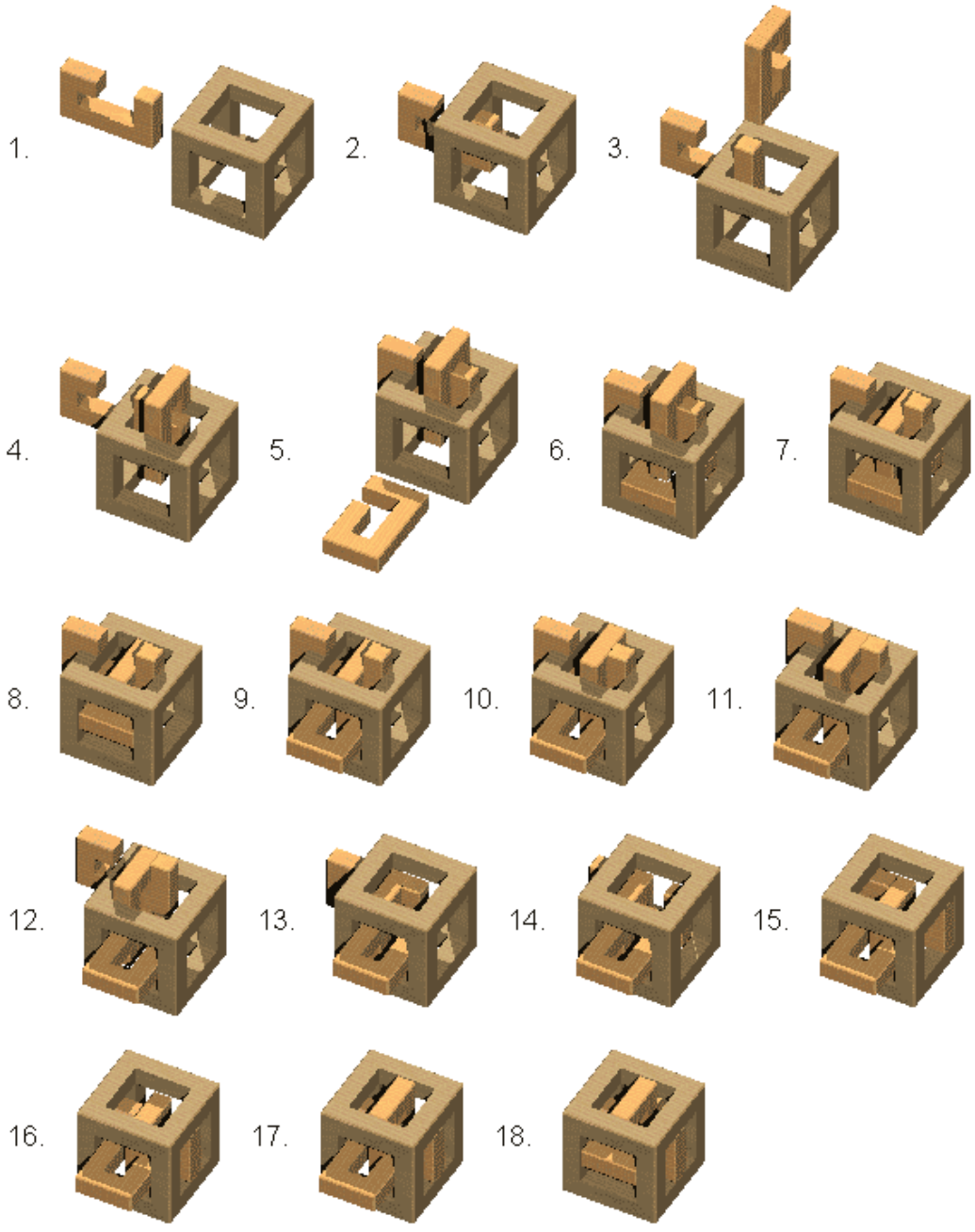

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55

Icosahedron92

Puzzle Goal:

Put together all pieces to form an icosahedral object

Materials:

cherry

Classification: Put Together Puzzle

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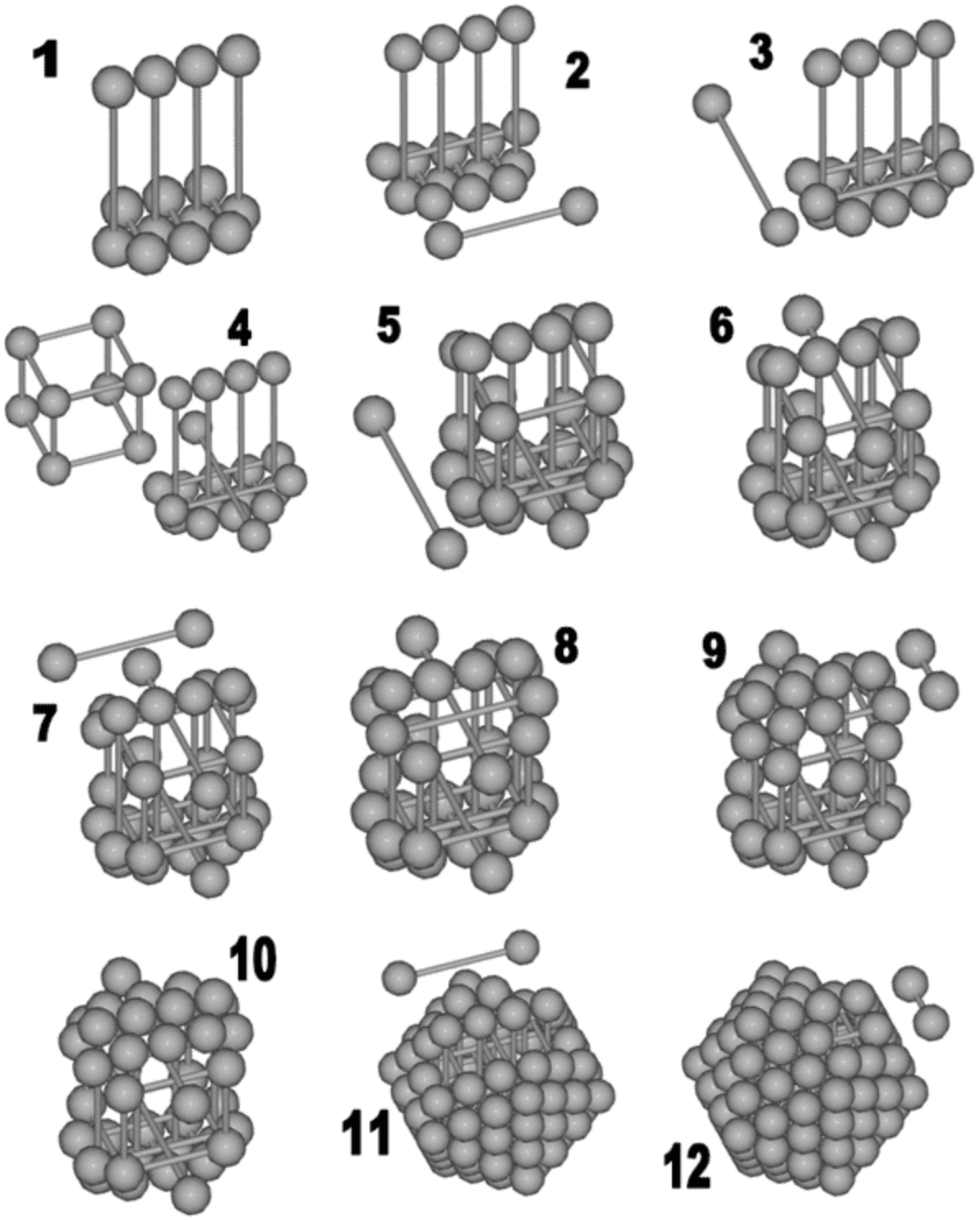
55 Icosahedron92

Puzzle Solution:



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56 Swan

Puzzle Goal:

Disassemble and reassemble the pieces

Materials:

Plastic – GPPS

Classification: 3D Puzzle

Notes:

This improves upon older Mag-Nif designs by introducing a non-symmetrical piece pattern and mechanisms for adding external pieces.

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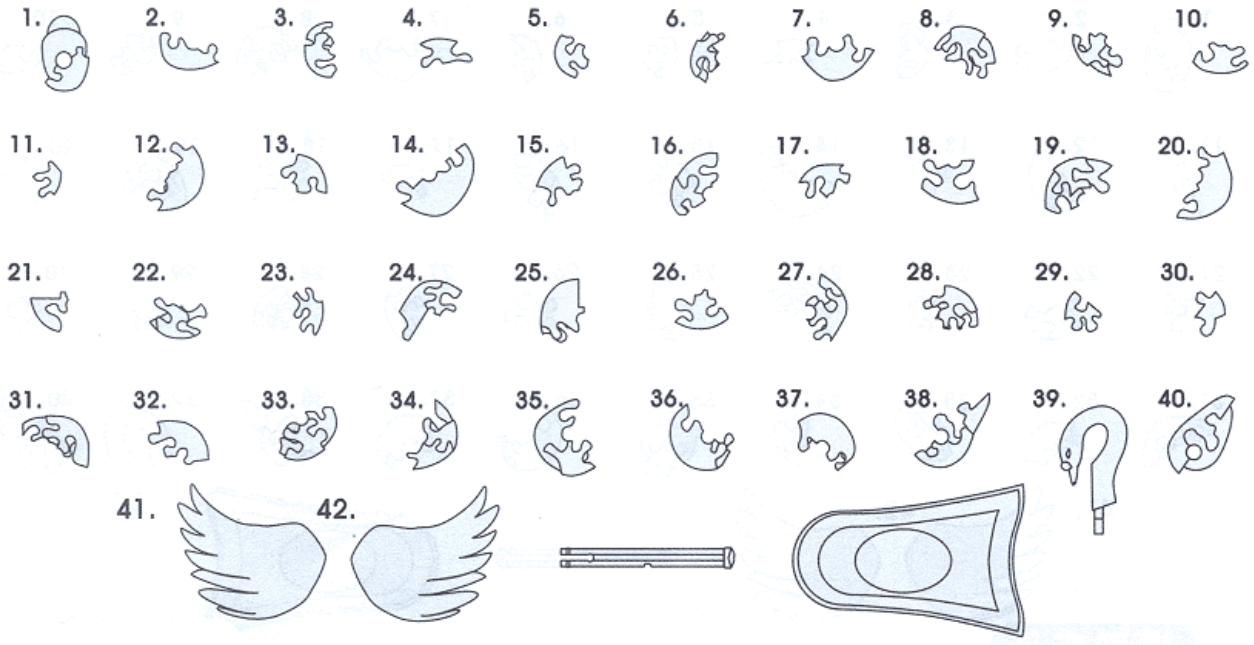
56 Swan

Puzzle Solution:

Every piece is numbered -- just follow the order of the numbers.



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57

cuBBox

Puzzle Goal:

Pass the stick throughout the cube

Materials:

Solid wood and solid brass

Classification: Dexterity

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57 cuBBox

Puzzle Solution:

Spin it. That's all!

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